Note remarks

Test sheet : CUM 8,3 b14
Edition : 16.08.93
Replaces : 05.92
Test oil : ISO-4113

Combination no. : 9 400 083 458

Injection pump

Pump designation : PES6A100D320/3RS2691

-2

EP type number : 9 410 230 028

Governor

Governor design. : RQV350...1103AB1218-

1R

Governer no. : 9 420 080 302

Customer—spec. information Customer : CUMMINS

Engine : 6 CT

1st version kW : 156.6 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $- \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 11.7...11.9

100 s: (11.5...12.1)

Spread cm3 : 0.3

100 s: (0.8)

2nd speed rpm : 350.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.5 100 s: (0.9)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150

travel mm : 6.90...7.10

2nd speed rpm : 350

travel mm : 1.40...1.90

3rd speed rpm : 650

travel mm : 4.20...4.70

4th speed rpm : 1400 travel mm : 8.70...9.20

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

peed rpm: 1325

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version 1st pressure hPa : rpm : 1100 Speed Rack travel in m: 11.80...12.10 2nd pressure hPa : 600
Rack travel in m: 13.20...13.30
3rd pressure hPa : 500 Aneroid pressure h: 800 : 117.0...119.0 Del.quantity 1000 : (115.0...121.0) cm3 : 3.50 Rack travel in m: 12.20...12.40 Spread 1000 : (8.06) START CUT-OUT RATED SPEED 1/min: 270 (290) Speed 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 107...115 Testing: 1st version 1st rack travel in: 11.60 Aneroid pressure h: 800 rpm : 1155...1165 Speed rpm : 700 Speed Del.quantity cm3/: 131.0...135.0 1000 s: (129.0...137.0) 2nd rack travel in: 4.00 Speed rpm : 1340...1370 4th rack travel in: 1500 Aneroid pressure h: 800 rpm : 0.00...1.00Speed Speed rpm : 800 Del.guantity cm3/: 128.5...132.5 LOW IDLE 1 1000 s: (126.5...134.5) Control lever Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 93.5...95.5 1000 s: (91.5...97.5) position degrees: 67...75 Testing: Speed rpm : 100 Minimum rack trave: 9.00 : 350 **BREAKAWAY** rpm Rack travel in mm : 5.90...6.10 1st version CONSTANT REGULATION 1mm rack travel less than rpm : 350...500 Speed full load rack tr: 11.60 TORQUE CONTROL Speed rpm : 1155...1165 Dimension a mm : ? Torque control curve - 1st version STARTING FUEL DELIVERY rpm : 1100 1st speed Rack travel in m: 12.60...12.70 Speed rpm : 100 Del.quantity cm3/ : 166.0...182.0 1000 s: (-) 2nd speed rpm : 700 Rack travel in m: 13.60...13.70 3rd speed rpm : 800 Rack travel in m: 13.30...13.50 Rack travel in mm : 19.00...21.00 4th speed rpm : 950 Rack travel in m: 12.80...13.10 LOW IDLE Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/: 13.0...17.0 Aneroid/Altitude Compensator Test 1000 s: (10.5...19.5) cm3 : 5.50 1st version Spread Setting 1000 s: (9.00) Speed : 500 rpm Pressure hPa : 800 Remarks: : C.D.C. # 3354617 Start-of-delivery mark at 10° cam Rack travel mm : 13.60...13.70 Measurement rotation angle after start of delivery, Speed  $1/\min : 500$ cylinder 1

Note remarks

Test sheet

: MWM Edition : 16.07.93

Replaces

Test oil : ISO-4113

Combination no. : 9 400 085 243

Injection pump

Pump designation : PES4A80D320RS1282-1

EP type number : 9 400 083 097

Governor

Governor design. : RS359/1500A2c2073-2R

: 9 420 083 269 Governer no.

Customer-spec. information

Customer : MWM

Enaine : D 229-4

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75

: (2.60...2.80)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 1500

Rack travel in mm : 9.20...9.30

Del.quantity cm3/: 5.8...5.9

100 s: (5.6...6.0)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 0.7...1.0

100 s: (0.5...1.2)

cm3 : 0.4

Spread

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Governor spring pre-tension

Rack travel in mm : 0.30...1.00

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

: 58.0...59.0 Del.quantity

1000 : (56.5...60.5)

: 2.50 Spread cm3

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 111...119

Testina:

1st rack travel in: 8.20

rpm : 1540...1550 Speed 2nd rack travel in: 4.00 Speed rpm : 1585...1615 4th rack travel in: 1750 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 78...86 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 6.1 Testing: Speed : 250 rpm Minimum rack trave: 6.80 npm : 350Rack travel in mm : 6.00...6.20 Rack travel in mm: 4.00 rpm : 430...490 Speed : 550 Speed man Maximum rack trave: 3.20 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1500 Rack travel in m: 9.20...9.30 2nd speed rpm : 500 Rack travel in m: 10.60...10.70 rpm : 900 3rd speed Rack travel in m: 10.20...10.40 4th speed rpm : 1200 Rack travel in m: 9.50...9.80 FUEL DELIVERY CHARACTERISTICS 1st version Speed rom : 500 Del.quantity cm3/: 58.0...61.0 1000 s: (56.5...62.5) Speed rpm : 900 Del.quantity cm3/ : 62.5...65.5 1000 s: (61.0...67.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.20 rpm : 1540...1550 Speed STARTING FUEL DELIVERY Speed : 100 rpm Rack travel in mm: 19.00...21.00

Remarks:

Note remarks

Test sheet : MWM

Edition : 16.08.93

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 085 261

Injection pump

Pump designation : PES6A80D320RS1271 : 9 400 083 058

EP type number

Governor

Governor design. : RSV350...1250A0c2029

-3R

: 9 420 083 271 Governer no.

Customer—spec. information Customer : MWM

Engine : D 229-6

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFFRENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 8.20...8.30

Del.quantity cm3/: 4.9...5.0

100 s: (4.8...5.2)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 0.6...0.9

100 s: (0.4...1.1)

cm3 : 0.4Spread

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

: 49.5...50.5 Del.quantity

1000 : (48.0...52.0)

: 2.50 Spread cm3

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 7.20 rpm : 1290...1300 Speed 2nd rack travel in: 4.00 rpm : 1320...1350 4th rack travel in: 1450 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.5 Testina: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 480...540 TORQUE CONTROL Torque control curve - 1st version rpm : 1250 1st speed Rack travel in m: 8.20...8.30 2nd speed rpm : 500 Rack travel in m: 9.80...9.90 4th speed rpm : 800 Rack travel in m: 9.10...9.40 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 50.0...53.0 1000 s: (48.5...54.5) rpm : 800 Speed Del.quantity cm3/: 50.5...53.5 1000 s: (49.0...55.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 7.20 rpm : 1290...1300 Speed STARTING FUEL DELIVERY Speed : 100 man Rack travel in mm : 19.00...21.00

: 350

rom

Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 6.5...9.5
1000 s: (4.5...11.5)
Spread cm3 : 4.00
1000 s: (6.00)

Remarks:

APPLICATION!

Tractor (tractor engines)

A07

Speed

LOW IDLE

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2 Note remarks Test sheet : MB 4,0 h : 16.07.93 Edition Phasing : 0-90-180-270 : 12.91 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 9 400 085 307 BASIC SETTING Injection pump 1st speed rpm: 1300 Pump designation : PES4A95D410RS2774 EP type number : 9 400 084 019 Rack travel in mm : 10.60...10.70 Governor : RQV300...1300AB1228-Governor design. Del.quantity cm3/: 9.0...9.2 : 9 420 080 268 Governer no. 100 s: (8.8...9.4) Customer-spec. information Spread cm3 : 0.3Customer : MERCEDES-BENZ 100 s: (0.8) : OM 364 A Engine 2nd speed rpm : 300.01st version kW : 85.0 Rack travel in mm: 6.9...7.1 Rated speed : 2600 Del.quantity cm3/: 0.8...1.2 100 s: (0.5...1.4) TEST BENCH REQUIREMENTS Spread cm3 : 0.5100 s: (0.9) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 419 992 198 GUIDE SLEEVE TRAVEL 1st speed rpm : 300 Inlet press., bar: 1.50 travel mm : 0.80...1.30 rpm : 500 2nd speed Test nozzle holder : 2.30...2.80 travel mm assembly : 0 681 343 009 rpm : 750 3rd speed : 4.10...4.30 travel mm Opening rpm : 1500 4th speed pressure, bar : 172...175 : 8.50...8.60 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 015 Control-lever position Degree: -1 Outside diameter rpm : 1500 Speed x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 6.00x1.50x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1300per values Aneroid pressure h: 700 Del.quantity : 90.0...92*.*0 BEGINNING OF DELIVERY 1000 : (88.0...94.0) : 3.50 Test pressure, bar: 25...27 Spread cm3 1000 : (8.00) Prestroke mm : 3.20...3.30 : (3.15...3.45) RATED SPEED

1st version Control Lever position degrees: 104...112 Testina: 1st rack travel in: 9.60 rpm : 1360...1370 Speed 2nd rack travel in: 4.00 rpm : 1475...1505 Speed 4th rack travel in: 1640 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 64...72 Testina: Speed rpm : 100 Minimum rack trave: 8.00 rpm : 300 Speed Rack travel in mm : 6.90...7.10 CONSTANT REGULATION Speed rpm : 420...550 TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 10.60...10.70 rpm : 800 2nd speed Rack travel in m: 11.00...11.10 4th speed rpm : 1000 Rack cravel in m: 10.80...11.00 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 700 Speed rpm Pressure Rack travel mm : 11.00...11.10 Measurement 1/min : 500Speed 1st pressure hPa :-Rack travel in m: 9.30...9.50 2nd pressure hPa : 410 Rack travel in m: 10.60...10.80 3rd pressure hPa : 280 Pack travel in m: 9.70...9.80

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 800 Speed Del.quantity cm3/: 84.0...88.0 1000 s: (82.0...90.0) Aneroid pressure h: 700 Speed rpm : 1000 Del.quantity cm3/ : 87.0...91.0 1000 s: (85.0...93.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/ : 52.0...54.0 1000 s: (50.0...56.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.60 Speed rpm : 1360...1370 STARTING FUEL DELIVERY Speed : 100 rom Del.quantity cm3/: 78.0...90.0 1000 s: (-) Rack travel in mm : 12.90...13.10 Remarks:

Speed

START CUT-OUT

1/min: 220 (240)

Note remarks

Test sheet : MWM Edition : 16.08.93 Replaces : 6.93

Test oil : ISO-4113

Combination no. : 9 400 085 314

Injection pump

Pump designation : PES6A9OD32ORS2718 EP type number : 9 400 084 003

Governor

: RSV350...1150A2c2097 Governor design.

-2R

: 9 420 083 276 Governer no.

Customer-spec. information Customer : MWM

Engine : TD 229 EC-06

: 117.8 1st version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80

: (2.65...2.85)

Rack travel in mm : ^ 00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 9.0...9.1

100 s: (8.8...9.3)

Spread cm3 : 0.3

100 s: (0.7)

2nd speed rpm : 350.0Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 1.3...1.7 100 s: (1.1...1.9)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

> Dearee: -3 rpm : 800

Speed Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 90.5...97.5

1000 : (88.5...93.5)

: 3.00 : (7.00) Spread cm3

1000

RATED SPEED

1st version

Control lever position degrees: 93...101 Testing: 1st rack travel in: 10.70 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 Speed rpm : 1250...1280 4th rack travel in: 1450 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.0 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 590...650 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 11.70...11.80 2nd speed rpm : 500 Rack travel in m: 12.10...12.20 4th speed rpm : 800 Rack travel in m: 11.90...12.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 88.5...91.5 1000 s: (86.5...93.5) Speed rpm : 800 Del.quantity cm3/: 88.5...91.5 1000 s: (86.5...93.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1190...1200 Speed STARTING FUEL DELIVERY : 100 rpm Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.40...6.60
Del.quantity cm3/: 13.5...17.5
1000 s: (11.5...19.5)

Spread cm3 : 4.50 1000 s: (7.00)

Remarks:

APPLICATION

Tractor (tractor engines)

A11

Note remarks

Test sheet : MWM

Edition : 16.07.93

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 085 348

Injection pump

Pump designation : PES6A95D41ORS2812

EP type number : 9 400 084 028

Governor

Governor design. : RSV350...900A7c805L

: 9 420 083 263 Governer no.

Customer-spec. information Customer : MWM

Engine : 6.10 TCA

: 154.5 1st version kW Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

- Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.90x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.75...2.85 Prestroke mm

: (2.70...2.90)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00

Difference ° CS : 1.50...2.50

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 13.90...14.00

Del.guantity cm3/: 13.6...13.8

100 s: (13,4...14.0)

cm3 : 0.3Spread

100 s: (0.8)

rpm : 350.02nd speed

Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 1.5...1.9

100 s: (1.3...2.2)

cm3 : 0.5 Spread

100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

: 136.5...138.5 Del.quantity 1000 : (134.5...140.5)

: 3.50 cm3 Spread

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testina: ist rack travel in: 13.00 Speed rpm : 900...905 2nd rask travel in: 4.00 : 941...954 Speed man 4th rack travel in: 1100 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 71...79 Setting point w/out bumper spring COM : 350 Rack travel in mm: 5.0 Testing: : 100 Speed man Minimum rack trave: 19.00 : 350 Speed CDM Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 : 365...425 Speed man TORQUE CONTROL Torque control curve - 1st version rpm : 850 1st speed Rack travel in m: 13.90...14.00 2nd speed : 550 (TOM) Rack travel in m: 13.90...14.10 5th speed rpm : 400 Rack travel in m: 15.20...15.80 STARTING FUEL DELIVERY Speed : 100 mar Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 350 Speed Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 15.5...19.5 1000 s: (13.0...22.0) Spread cm3 : 5.501000 s: (9.00) Remarks:

**APPLICATION** 

Generator

Note remarks

Test sheet : DEZ Edition : 16.07.93

Replaces

Test oil : ISO-4113

Combination no. : 9 400 085 356

Injection pump

Pump designation : PES6A85D410RS2756 EP type number : 9 400 093 006

Governor

: RSV325...1150A1C1165 Governor design.

: 9 420 083 290 Governer no.

Customer—spec. information

Customer : DEUTZ ARGENTINA

Engine : BF6L913

: 118.0 1st version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening 1

pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(4) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00

: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 7.2...7.3

100 s: (7.0...7.5)

Spread cm3 : 0.3

100 s: (0.7)

2nd speed rpm : 325.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

: 72.5...73.5 Del.quantity

1000 : (70.5...75.5)

: 3.00 Spread cm3

: (7.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 110...118

Testing:

1st rack travel in: 10.30

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1220...1250 Speed

4th rack travel in: 1380

rom : 0.30...1.70Speed

LOW IDLE 1 Control lever

position degrees: 73...81

Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm : 7.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 325
Rack travel in mm : 7.90...8.10

Rack travel in mm : 2.00 rpm : 540...600 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 11.30...11.40

2nd speed rpm : 500

Rack travel in m: 13.00...13.10

4th speed rpm : 800

Rack travel in m: 12.20...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500 Del.quantity cm3/ : 78.0...81.0 1000 s: (76.0...83.0)

Speed rpm : 800

Del.quantity cm3/: 75.0...78.0

1000 s: (73.0...80.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.30

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325 Rack travel in mm : 7.90...8.10 Del.quantity cm3/: 9.0...13.0

1000 s: (7.0...15.0)

Spread

cm3 : 4.50

1000 s: (7.00)

Remarks:

**APPLICATION** 

Tractor (tractor engines)

A15

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : DF7 Edition : 16.08.93 Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 9 400 085 357 Time to cyl. ro. : 1 Injection pump BASIC SETTING Pump designation : PES6A800410RS2755 EP type number : 9 400 093 005 1st speed rpm: 1150 Governor Governor design. : RSV325...1150A1c1165 Rack travel in mm : 9.30 ... 9.40 Governer no. : 9 420 083 290 Del.quantity cm3/ : 5.4...5.5 Customer-spec. information 100 s: (5.2...5.6) Customer : DEUTZ ARGENTINA Spread cm3 : 0.2Engine : F6L913 100 s: (0.4) 1st version kW : 96.0 Rated speed : 2300 rpm : 325.0 2nd speed Rack travel in mm: 6.4...6.6 TEST BENCH REQUIREMENTS Del.quantity cm3/: 0.6...0.9 100 s: (0.4...1.1) Test oil cm3 : 0.4Spread inlet temp. °C ; 38...42 100 s: (0.6) Overflow valve GUIDE SLEEVE POSITION : 1 419 992 198 Control-lever position Degree: -3 Inlet press., bar: 1.50 rpm : 800 Speed Rack travel in nm : 0.30...1.00 Test nozzle holder assembly : 0 681 343 009 Governor spring pre-tension Click setting x : 5.50Openina pressure, bar : 172...175 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test Lines : 1 680 750 003 Speed 1:pm : 1150 Del.quantity : 54.0...56.5) Outside diameter x Wall thickness : 2.50 Spread cm3 x Length mm : 6.00x2.00x600 1000 : (4.00) (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values Control lever position degrees: 111...119 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing: 1st rack travel in: 8.30 Prestroke mm : 1.90...2.00 rpm : 1190...1200 Speed

2nd rack travel in: 4.00

: (1.85...2.05)

Speed rpm : 1210...1240 4th rack travel in: 1380 Speed rpm : 0.30...1.70LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring rpm : 325 Speed Rack travel in mm: 6.0 Testing: Speed rom : 100 Minimum rack trave: 19.00 rpm : 325 Speed Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed rpm : 495...555 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 9.30...9.40 2nd speed rpm : 500 Rack travel in m: 11.10...11.20 4th speed rpm : 800 Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 61.0...64.0 1000 s: (59.5...65.5) Speed rpm : 800 Del.quantity cm3/: 56.0...59.0 1000 s: (54.5...60.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.30 Speed rpm : 1190...1200 STARTING FUEL DELIVERY Speed rpm : 100 Rack travel in mm : 19.00...21.00 LOW IDLE

Speed rpm : 325 Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 6.0...9.0 1000 s: (4.0...11.0) A17

cm3 : 4.00Spread 1000 s: (6.00) Remarks:

:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-3-5-4-2 Note remarks Test sheet : DEZ Edition : 16.08.93 Phasing : 0-72-144-216-288 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75)Combination no. : 9 400 085 358 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PES5A80D410RS2526 EP type number : 9 400 093 007 1st speed rpm: 1075 Governor Governor design. : RSV325...1075A1c1166 Rack travel in mm : 9.40...9.50 : 9 420 083 291 Governer no. Del.quantity cm3/ : 5.2...5.3 Customer-spec. information 100 s: (5.1...5.5) Customer : DEUTZ ARGENTINA Spread cm3 : 0.2Engine : F5L913 100 s: (0.4) 1st version kW : 87.0 Rated speed : 2150 2nd speed rpm : 325.0Rack travel in mm: 6.4...6.6 TEST BENCH REQUIREMENTS Del.quantity cm3/: 0.6...0.9 100 s: (0.4...1.1) Test oil cm3 : 0.4Spread inlet temp. °C : 38...42 100 s: (0.6) Overflow valve GUIDE SLEEVE POSITION : 1 419 992 198 Control-lever position Degree: -3 Inlet press., bar: 1.50 rpm : 800 Speed Rack travel in mm : 0.30...1.00 Test nozzle holder assembly : 0 681 343 009 Governor spring pre-tension Click setting x : 5.50 Opening pressure, bar : 172...175 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 003 Speed rpm : 1075 Del.quantity : 52,5...53.5 Outside diameter 1000 : (51.0...55.0) x Wall thickness : 2.50 Spread cm3 x Length mm : 6.00x2.00x600 1000 : (4.00) (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values Control lever position degrees: 107...115 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing: 1st rack travel in: 8.40

Speed

2nd rack travel in: 4.00

rpm : 1115...1125

Prestroke mm

: 1.90...2.00

: (1.85...2.05)

Speed rpm : 1140...1170 4th rack travel in: 1320 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever

position degrees: 75...83 Setting point w/out bumper spring

rpm : 325 Rack travel in mm: 6.0

Testing:

Speed **m** Minimum rack trave: 19.00 rpm : 325 Speed Rack travel in mm : 6.40...6.60

Rack travel in mm: 2.00 Speed rpm : 495...555

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1075

Rack travel in m: 9.40...9.50

2nd speed rpm : 500 Rack travel in m: 11.20...11.30

4th speed rpm : 800

Rack travel in m: 10.40...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/: 61.0...64.0

1**00**0 s: (59.5...65.5)

rpm : 800 Speed

Del.quantity cm3/: 56.5...59.5 1000 s: (55.0...61.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 8.40

Speed rpm : 1115...1125

STARTING FUEL DELIVERY

rpm : 100

Rack travel in mm: 19.00...21,00

LOW IDLE

Speed rpm : 325

Rack travel in mm: 6.40...6.60 Del.quantity cm3/: 6.0...9.0 1000 s: (4.0...11.0)

Spread cm3 : 4.001000 s: (6.00)

Remarks:

APPLICATION

Tractor (tractor engines)

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BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2 Note remarks Test sheet : DEZ Edition : 16.08.93 Phasing : 0-90-180-270 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 9 400 085 359 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PES4A80D410RS2523 EP type number : 9 400 093 008 rpm: 1075 1st speed Governor : RSV325...1075A1C1166 Governor design. Rack travel in mm : 10.20...10.30 : 9 420 083 291 Governer no. Del.quantity cm3/: 6.0...6.1 Customer-spec. information 100 s: (5.8...6.2) Customer : DEUTZ ARGENTINA Spread cm3 : 0.2Engine : F4L913 100 s: (0.4) 1st version kW : 56.0 Rated speed : 2150 rpm : 325.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 0.6...0.9 TEST BENCH REQUIREMENTS 100 s: (0.4...1.1) Test oil cm3 : 0.4Spread inlet temp. °C : 38...42 100 s: (0.6) Overflow valve GUIDE SLEEVE POSITION : 1 419 992 198 Control-Lever position Degree: -3 Inlet press., bar: 1.50 rpm : 800 Speed Rack travel in mm : 0.30...1.00 Test nozzle holder : 0 681 343 009 assembly Governor spring pre-tension Click setting x : 5.50Opening pressure, bar : 172...175 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test Lines : 1 680 750 003 Speed rpm : 1075 Del.quantity : 60.0...61.0 Outside diameter 1000 : (58.5...62.5) x Wall thickness : 2.50 cm3 Spread x Length mm : 6.00x2.00x600 1000 : (4.00) (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values \_ Control lever position degrees: 108...116 BEGINNING OF DELIVERY

Testing:

Speed

1st rack travel in: 9.20

2nd rack travel in: 4.00

rpm : 1115...1125

....

Prestroke mm

Test pressure, bar: 25...27

: 1.90...2.00 : (1.85...2.05)

Speed rpm : 1145...1175 Spread cm3 : 4.004th rack travel in: 1320 1000 s: (6.00) Speed rpm : 0.30...1.70Remarks: LOW IDLE 1 Control lever position degrees: 75...83 **APPLICATION** Setting point w/out bumper spring Speed rpm : 325 Tractor (tractor engines) Rack travel in mm: 6.0 Testing: Speed : 100 rpm Minimum rack trave: 19.00 Speed rpm : 325 Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed rpm : 495...555 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1075 Rack travel in m: 10.20...10.30 2nd speed rpm : 500 Rack travel in m: 11.00...11.10 4th speed rpm : 750 Rack travel in m: 10.50...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/ : 59.5...62.5 1000 s: (58.0...64.0) Speed : 750 rpm Del.quantity cm3/: 57.5...60.5 1000 s: (56.0...62.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.20 rpm : 1115...1125 Speed STARTING FUEL DELIVERY Speed : 100 rpm Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 325 Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 6.0...9.0 1000 s: (4.0...11.0)

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BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 : 1-5- 3- 6- 2- 4 Firing order Note remarks Test sheet : CUM Edition : 16.07.93 Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 9 400 085 361 Time to cyl. no. : 1 Injection pump BEGINNING OF DELIVERY DIFFERENCE Pump designation : PES6A100d320/3RS2691 betw. rack trav. m: 9.00...12.00 EP type number : 9 410 230 028 & maximum rack tra: 21.00 Governor Difference ° CS : 3.00...4.00 Governor design. : RQV350...1150AB1274R Governer no. : 9 420 080 347 BASIC SETTING Customer-spec. information 1st speed rpm: 1150 Customer : CUMMINS Rack travel in mm : 11.60...11.70 Engine : 6 CT - 8.3 LDel.quantity cm3/: 10.3...10.5 1st version kW : 146.0 Rated speed : 2300 100 s: (10.1...10.7) TEST BENCH REQUIREMENTS Spread cm3 : 0.3Test oil 100 s: (0.8) inlet temp. °C : 38...42 2nd speed rpm : 350.0 Rack travel in mm : 5.7...5.9 Overflow valve : 1 419 992 198 Del.quantity cm3/: 1.1...1.5 100 s: (0.9...1.8) Inlet press., bar: 1.50 Spread cm3 : 0.5100 s: (0.9) Test nozzle holder assembly : 0 681 343 009 (B) Setting of injection pump with governor **Opening** pressure, bar : 172...175 GUIDE SLEEVE TRAVEL 1st speed rpm : 1150 : 8.20...8.40 travel mm : 350 : 2.10...2.60 Test Lines : 1 680 750 014 2nd speed rpm travel mm Outside diameter 3rd speed : 550 rpm x Wall thickness travel mm : 3.70...4.20 x Length mm : 6.00x2.00x600 4th speed : 850 rom : 5.40...5.90 travel mm (A) Injection pump setting values 5th speed : 1300 rom Insp. values in parentheses travel mm : 9.70...10.20 Set equal delivery quant. per values GUIDE SLEEVE POSITION Control-lever position BEGINNING OF DELIVERY Degree: -1 Test pressure, bar: 25...27 rpm : 1160 Rack travel in mm : 15.20...17.80 Prestroke mm : 2.80...2.90

FULL LOAD DELIV. AT FULL LOAD STOP

: (2.75...2.95)

1st version 1st pressure hPa : -Speed rpm : 1150 Rack travel in m: 10.70...10.80 Aneroid pressure h: 600 2nd pressure hPa : 330 Rack travel in m: 10.90...11.00 3rd pressure hPa : 380 Rack travel in m: 11.30...11.40 : 103.0...105.0 Del.quantity 1000 : (101.0...107.0) cm3 : 3.50 1000 : (8.00) Spread START CUT-OUT RATED SPEED Speed 1/min: 270 (290) 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 113...121 Testing: 1st version 1st rack travel in: 10.60 Aneroid pressure h: 600 rpm : 1190...1200 Speed rpm : 600 Speed 2nd rack travel in: 4.00 Del.quantity cm3/: 107.0...111.0 1000 s: (105.0...113.0) Speed rpm : 1280...1310 4th rack travel in: 1400 Aneroid pressure h: 600 Speed rpm : 0.00...1.00 rpm : 800 Speed Del.quantity cm3/: 108.0...112.0 1000 s: (106.0...114.0) LOW IDLE 1 Control lever Aneroid pressure h: -Speed rpm : 1150 Del.quantity cm3/: 89.5...91.5 position degrees: 69...77 Testing: 1000 s: (87.5...93.5) Speed rpm : 100 cm3 : 3.50Spread Minimum rack trave: 10.50 1000 s: (8.00) rpm : 350 Rack travel in mm : 5.70...5.90 **BREAKAWAY** CONSTANT REGULATION Speed rpm : 300...500 1st version 1mm rack travel less than TORQUE CONTROL Dimension a mm :? full load rack tr: 10.60 Torque control curve - 1st version Speed rpm : 1190...1200 1st speed rpm : 1150 Rack travel in m: 11.60...11.70 STARTING FUEL DELIVERY rpm : 600 2nd speed Rack travel in m: 12.20...12.30 Speed rpm : 100 Del.quantity cm3/ : 165.0...181.0 1000 s: (162.0...184.0) 3rd speed rpm : 800 Rack travel in m: 12.00...12.10 rpm : 900 4th speed Rack travel in m: 11.80...11.90 Rack travel in mm : 19.00...21.00 Aneroid/Altitude LOW IDLE Compensator Test Speed rpm : 350 Rack travel in mm : 5.70...5.90 1st version Del.quantity cm3/: 11.5...15.5 Setting 1000 s: (9.0...18.0) Speed : 1150 rpm Spread cm3 : 5.50Pressure hPa : 600 1000 s: (9.00) : 11.60...11.70 Rack travel mm Remarks: Measurement : C.D.C. # 3353787

Speed

1/min : 1150

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : MB 11,8 n : 02.08.91 **Fdition** Replaces : 03.91 Test oil : ISO-4113

Combination no. : 9 400 087 319

Injection pump

Pump designation : PE6P110A720RS371-1 : 0 411 816 166 EP type number

Governor

: RQV300...1050PA747 Governor design.

Governer no. : 9 420 080 195

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : OM 355 A

1st version kW : 210.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 16.1...16.3

100 s: (15.9...16.5)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.02nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.6...2.1

100 s: (1.4...2.3)

cm3 : 0.3Spread 100 s: (0.4)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1070 travel mm : 8.50...8.60

2nd speed rpm : 270

travel mm : 0.80...1.20

3rd speed rpm : 450

travel mm : 2.80...3.10

4th speed rpm : 800

: 5.50...5.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1070 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

: 161.0...163.0 Del.quantity

1000 : (159.0...165.0)

Spread : 4.00 cm3

1000 : (7.50)

RATED SPEED

1st version Control Lever position degrees: 99...107 Testing: 1st rack travel in: 10.50 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 48...56 Testing: Speed rpm : 100 Minimum rack trave: 8.60 rpm : 300 Rack travel in mm : 5.90...6.10 CONSTANT REGULATION rpm : 270...340 Speed START CUT-OUT 1/min : 230 (270) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 500 Speed Del.quaritity cm3/: 152.0...156.0 1000 s: (149.0...159.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.50 rpm : 1090...1100 Speed STARTING FUEL DELIVERY : 100 rpm Del.quantity cm3/: 120.0...145.0 1000 s: (116.0...149.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.25...4.35 Prestroke mm : (4.20...4.30) Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : FOR 7,8 c : 20.08.93 Test sheet Edition Replaces : 02.05.89 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 087 376 Tolerance + - ° : 0.50 (0.75)Injection pump Time to cyl. no. : 1 Pump designation : PES6P110A720RS3193 EP type number : 9 400 087 057 BASIC SETTING Governor Governor design. : RSV650...1250P8A528 1st speed rpm: 1200 Governer no. : 9 420 082 323 Rack travel in mm : 13.20...13.30 Customer-spec. information Customer : FORD FNH Del.quantity cm3/: 13.2...13.4 Engine : 7.8 ! 100 s: (13.0...13.6) 1st version kW : 140.0 Spread cm3 : 0.5Rated speed : 2500 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 650.0Test oil Rack travel in mm: 5.9...6.1 inlet temp. °C : 38...42 Del.quantity cm3/: 0.8...1.2 100 s: (0.5...1.5) Overflow valve cm3 : 0.3Spread : 9 401 087 214 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 assembly : 1 688 901 017 rpm : 800 Rack travel in mm : 0.30...1.00 Opening pressure, bar : 207...210 Governor spring pre-tension Click setting x : 3.25Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test Lines : 1 680 750 015 beea rpm : 1200 Del.quantity : 132.0...134.0 Outside diameter 1000 : (130.0...136.0) x Wall thickness Spread : 5.00 cm3 x Length mm : 6.00x1.50x600 : (9.00) 1000 (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values Control lever position degrees: 49...57 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing:

1st rack travel in: 12.20

rpm : 1260...1270 Speed 2nd rack travel in: 4.00 Speed rpm : 1300...1320 4th rack travel in: 1400 Speed rpm : 0.30...1.70LOW IDLE 1 Control lever position degrees: 23...31 Setting point w/out bumper spring : 650 Speed rom Rack travel in mm: 6.0 Testing: : 600 Speed rpm Minimum rack trave: 10.00 Speed rpm : 650 Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed : 685...745 rpm FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 800 Del.quantity cm3/: 110.0...114.0 1000 s: (108.0...116.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.20 Speed rpm : 1260...1270 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 135.0...155.0 1000 s: (131.0...159.0) Rack travel in mm : 20.00...21.00 Remarks: **APPLICATION** Combine-harvester

Note remarks

Test sheet : MB

Edition : 16.08.93

Replaces : -

Test oil : ISO-4113

Combination no. : 9 400 087 429

Injection pump

Pump designation : PES6P120A720RS3256-3

EP type number : 9 400 087 079

Governor

Governor design. : RQV350...1300PA1096

Governer no. : 9 420 080 349

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 156.6 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 20.00...21.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. ro. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 4.80...5.40

Del.guantity cm3/: 1.7...2.0

100 s: (1.4...2.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 7.5...7.8 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

m on governe.

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.40...8.60

2nd speed rpm : 350

travel mm : 1.00...1.50

3rd speed rpm: 650

travel nm : 3.90...4.40

4th speed rpm : 1100

travel mm : 6.20...6.70

5th speed rpm: 1460

travel mm : 9.30...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm: 1360

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 10001st version : 17.0...20.0 Del.quantity Aneroid pressure h: 1200 1000 : (14.0...23.0) Speed : 1300 rpm Spread cm3 : 2.00 Del.quantity cm3/: 157.0...159.0 1000 : (3.00) 1000 s: (154.0...162.0) Spread cm3 : 8.00RATED SPEED 1000 s: (12.0) Aneroid pressure h: 1200 1st version Speed : 800 rpm Del.quantity cm3/: 141.0...145.0 1000 s: (138.0...148.0) Control lever position degrees: 108...116 : 8.00 Spread cm3 Testing: 1000 s: (12.0) 1st rack travel in: 10.80 Aneroid pressure h: rpm : 1340...1350 Speed : 500 rpm 2nd rack travel in: 4.00 Del.quantity cm3/: 69.0...71.0 rpm : 1440...1470 1000 s: (66.0...74.0) Speed 4th rack travel in: 1570 cm3 : 8.00Spread rpm : 0.00...1.00Speed 1000 s: (12.0) LOW IDLE 1 Control lever **BREAKAWAY** position degrees: 76...84 1st version Testina: 1mm rack travel less than : 250 Speed rpm Minimum rack trave: 9.50 full load rack tr: 10.80 : 350 rpm Speed rpm : 1340...1350Rack travel in mm : 7.50...7.80 STARTING FUEL DELIVERY CONSTANT REGULATION Speed : 300...450 man Speed : 100 mgn Del.quantity cm3/: 100.0...120.0 1000 s: (96.0...124.0) Aneroid/Altitude Compensator Test LOW IDLE 1st version Settina Speed rpm Rack travel in mm : 7.50...7.80 Speed : 500 rpm Pressure hPa : 1200 Del.quantity cm3/: 14.0...20.0 Rack travel : 11.80...12.00 1000 s: (11.0...23.0) mm cm3 : 8.00Spread Measurement 1000 s: (12.00) 1/min: 500 Speed Remarks: 1st pressure hPa : -Rack travel in m: 9.90...10.20 2nd pressure hPa : 300 Start-of-delivery blocking takes place Rack travel in m: 10.60,...10.80 with piston stroke 4.05 mm (as of BCD) 3rd pressure hPa : 600 at no. 1 cylinder. Rack travel in m: 11.80...12.00 START CUT-OUT Speed 1/min : 270 (290) FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB

Edition : 16.08.93

Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 430

Injection pump

Pump designation: PES6P120A720RS3256-3

EP type number : 9 400 087 079

Governor

Governor design. : RQV350...1300PA1096-

: 9 420 080 350 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 171.5 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 20.00...21.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 4.80...5.40

Del.quantity cm3/: 1.7...2.0

100 s: (1.4...2.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0 Rack travel in mm: 7.5...7.8 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

: 8.40...8.60 travel mm

rpm : 350 2nd speed

travel mm : 1.00...1.50 3rd speed rpm : 650

travel mm

: 3.90...4.40

4th speed rpm : 1100

: 6.20...6.70 travel mm

5th speed : 1460 rpm : 9.30...9.80

travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree:

Speed rpm : 1360

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 1000 Del.quantity : 17.0...20.0 1000 : (14.0...23.0) : 2.00 Spread cm3 1000 : (3.00) Spread RATED SPEED 1st version control lever position degrees: 109...117 Spread Testing: 1st rack travel in: 11.60 rpm : 1340...1350 2nd rack travel in: 4.00 Speed rpm : 1455...1485 4th rack travel in: 1600 Spread Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 76...84 Testing: Speed : 250 rpm Minimum rack trave: 9.50 full load rack tr: 11.60 : 350 rpm Speed Rack travel in mm : 7.50...7.80 CONSTANT REGULATION Speed rpm : 300...450 Speed Aneroid/Altitude Compensator Test LOW IDLE 1st version Setting Speed rpm : 500 Pressure hPa : 1200 Rack travel mm : 12.60...12.80 Spread Measurement  $1/\min : 500$ Speed Remarks: 1st pressure hPa : -Rack travel in m: 9.90...10.20 2nd pressure hPa : 300 Rack travel in m: 10.60...10.80 3rd pressure hPa : 700 Rack travel in m: 12.20...12.40 START CUT-OUT 1/min: 270 (290) Speed

FUEL DELIVERY CHARACTERISTICS

**B04** 

1st version Aneroid pressure h: 1200 rpm : 1300 Del.quantity cm3/: 177.0...179.0 1000 s: (174.0...182.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1200 Speed rpm : 800 Del.quantity cm3/ : 159.0...163.0 1000 s: (156.0...166.0) cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 69.0...71.0
1000 s: (66.0...74.0) cm3 : 8.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than

STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/: 100.0...120.0 1000 s: (96.0...124.0)

rpm : 1340...1350

Speed rpm : 350 Rack travel in mm : 7.50...7.80 Del.quantity cm3/: 14.0...20.0 1000 s: (11.0...23.0) cm3 : 8.00 1000 s: (12.00)

Start-of-delivery blocking takes place with piston stroke 4.05 mm (as of BCD) at no. 1 cylinder.

Note remarks

Test sheet : MB

Edition : 16.08.93

Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 431

Injection pump

Pump designation : PES6P120A720RS3256-2

EP type number : 9 400 087 080

Governor

Governor design. : RQV350...1300PA1096-

: 9 420 080 351 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 141.7 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 : (2.95...3.15) Prestroke mm

Rack travel in mm : 20.00...21.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-246-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 4.80...5.40

Del.quantity cm3/: 1.7...2.0

100 s: (1.4...2.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0 Rack travel in mm : 7.5...7.8 2nd speed

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.40...8.60

2nd speed rpm : 350

: 1.00...1.50 travel mm

3rd speed rpm : 650

: 3.90...4.40 travel mm

rpm : 1100 4th speed

travel mm : 6.20...6.70

5th speed rpm : 1460

travel mm : 9.30...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1360

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

rpm : 1000Speed Del.quantity : 17.0...20.0 1000 : (14.0...23.0) cm3 : 2.00 Spread 1000 : (3.00)RATED SPEED 1st version Control lever position degrees: 108...116 Testing: 1st rack travel in: 9.70 rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1425...1455 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 76...84 Testing: : 250 Speed rom Minimum rack trave: 9.50 : 350 rom Rack travel in mm : 7.50...7.80 CONSTANT REGULATION Speed rpm : 300...450 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 1200 Rack travel mm : 10.70...10.90 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.90...10.20 2nd pressure hPa : 250 Rack travel in m: 10.40...10.60 3rd pressure hPa : 340 Rack travel in m: 10.70...11.00 START CUT-OUT Speed 1/min : 270 (290)

1st version

1st version Aneroid pressure h: 1200 rpm : 1300Speed Del.quantity cm3/: 140.0...142.0 1000 s: (137.0...145.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1200 Speed rpm : 800 Del.quantity cm3/: 117.0...121.0 1000 s: (114.0...124.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 69.0...71.0 1000 s: (66.0...74.0) cm3 : 8.00Spread 1000 s: (12.0)

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 9.70

Speed rpm : 1340...1350

## STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0 1000 s: (86.0...114.0)

## LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.50...7.80
Del.quantity cm3/ : 14.0...20.0
1000 s: (11.9...23.0)
Spread cm3 : 8.00
1000 s: (12.00)

## Remarks:

Start-of-delivery blocking takes place with piston stroke 4.05 mm (as of BCD) at no. 1 cylinder.

FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : FOR 7,8 n 3 : 16.07.93 Edition Replaces : 05.91 Test oil : ISO-4113 Combination no. : 9 400 087 441 Injection pump Pump designation : PES6P110A720RS3267 EP type number : 9 400 087 072 Governor Governor design. : RSV650...1250P8A528 ~1 Governer no. : 9 420 082 328 Customer-spec. information Customer : FORD FNH : 7.8 L Engine 1st version kW : 149.0 : 2500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 9 401 087 403 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 017 Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6

Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.25...4.35 : (4.20...4.30) Prestroke mm Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasina : 0-60-120-180-240-300 Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1200 Rack travel in mm : 13.70...13.80 Del.quantity cm3/: 14.1...14.3 100 s: (13.9...14.5) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 650.0Rack travel in mm: 5.6...5.8 Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.6) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...1.00 Governor spring pre-tension Click setting x : 3.25FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1200 : 141.5...143.5 Del.quantity 1000 : (139.5...145.5) : 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 98...106

Testing:

1st rack travel in: 12.70 Speed rpm : 1260...1270 2nd rack travel in: 4.00 Speed rpm : 1300...1310 3rd rack travel in: 4.00 Speed rpm : 1290...1320 4th rack travel in: 1400 Speed rpm : 0.30...1.70LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring : 650 rpm Rack travel in mm: 5.2 Testing: Speed rpm : 600 Minimum rack trave: 10.00 Speed rpm : 650 Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 Speed rpm : 670...730 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 800 Del.quantity cm3/: 123.0...127.0 1000 s: (121.0...129.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.70 Speed rpm : 1260...1270 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135.0...155.0 1000 s: (131.0...159.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm : 650 Rack travel in mm : 5.60...5.80 Del.quantity cm3/ : 9.0...13.0 1000 s: (6.0...16.0) cm3 : 3.50 Spread 1000 s: (5.50) Remarks:

**APPLICATION** 

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 25...27 Note remarks : 3.45...3.55 Prestroke mm : (3.40...3.60) Test sheet : CUM Rack travel in mm : 9.00...12.00 Edition : 16.08.93 Firing order : 1-5-3-6-2-4 Replaces Test oil : ISO-4113 Combination no. : 9 400 087 449EB : 0-60-120-180-240-300 Phasing Phasing Injection pump Tolerance + - ° : 0.50 (0.75) Pump designation : PES6P120A320/3RS3264 EP type number : 9 400 087 075 Time to cyl. no. : 1 Governor Governor design. : RQV350...1100PA973 BASIC SETTING : 9 420 080 293 Governer no. 1st speed rpm: 1100 Cust. part no. : 3355296-VERSA041 Rack travel in mm : 11.00...11.10 Customer-spec. information Customer : CUMMIN'S Del.quantity cm3/: 18.9...19.1 Engine : 6 CTA - 8.3 L 100 s: (18.6...19.4) 1st version kW : 194.0 cm3 : 0.5Spread Rated speed : 2200 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 350.02nd speed Rack travel in mm: 5.9...6.1 Test oil Del.quantity cm3/: 0.5...1.1 inlet temp. °C : 38...42 100 s: (0.3...1.3) Overflow valve cm3 : 0.5Spread : 1 417 413 025 100 s: (0.8) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 1150 Openina . travel mm : 7.00...7.10 : 207...210 pressure, bar 2nd speed rpm : 350 travel mm : 1.40...1.80 Orifice plate 3rd speed rpm : 650 diameter mm : 0,8 : 4.30...4.70 travel mm rpm : 1400 4th speed travel mm : 8.80...9.20 Test lines : 1 680 750 015 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 x Length mm : 6.00x1.50x600 rpm : 1325 Rack travel in mm : 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant. per values \_\_\_ 1st version Speed rpm : 1100BEGINNING OF DELIVERY Aneroid pressure h: 1200

Del.quantity : 189.0...194.0) : 5.00 Spread cm3 1000 : (9.00)RATED SPEED 1st version Control lever position degrees: 106...114 Testing: 1st rack travel in: 10.00 Speed rpm: 1160...1170 2nd rack travel in: 4.00 rpm : 1310...1340 Speed 4th rack travel in: 1500 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 66...74 Testina: Speed rpm : 100Minimum rack trave: 8.00 rpm : 350 Rack travel in mm : 5.90...6.10 CONSTANT REGULATION rpm : 425...575 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 1200 Rack travel mm : 11.00...11.10 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 430 Rack travel in m: 9.40...9.50 3rd pressure hPa : 700 Rack travel in m: 10.40...10.70 START CUT-OUT 1/min: 290 (310) Speed FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1200
Speed rpm: 700
Del.quantity cm3/: 187.0...191.0
1000 s: (184.0...194.0)
Spread cm3: 6.00
1000 s: (12.0)
Aneroid pressure h: Speed rpm: 500
Del.quantity cm3/: 116.0...119.0
1000 s: (114.0...121.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00 Speed rpm : 1160...1170

STARTING FUEL DELIVERY

LOW IDLE

Remarks:

Start-of-delivery mark is at 8° after start of delivery.

B10

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB

Edition : 16.08.93

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 087 450

Injection pump

Pump designation: PES6P120A720RS3256-2

EP type number : 9 400 087 080

Governor

Governor design. : RQV350...1300PA1097

Governer no. : 9 420 080 352

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 126.8 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/n: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 20.00...21.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no.: 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 4.80...5.40

Del.quantity cm3/: 1.7...2.0

100 s: (1.4...2.3)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 350.0 Rack travel in mm : 7.5...7.8

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

travel mm : 8.40...8.60

rpm : 350 2nd speed travel mm

: 1.00...1.50 3rd speed rpm : 650

travel mm : 3.90...4.40

rpm : 1100 4th speed

: 6.20...6.70 travel mm

rpm : 1460 5th speed

: 9.30...9.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1360 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 1000Del.quantity : 17.0...20.0 1000 : (14.0...23.0) : 2.00 Spread cm3 1000 : (3.00)RATED SPEED 1st version Control Lever position degrees: 108...116 Testing: 1st rack travel in: 9.70 rpm : 1340...1350 Speed 2rd rack travel in: 4.00 rpm : 1425...1455 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 76...84 Testing: Speed rpm : 250 Minimum rack trave: 9.50 : 350 mgn Rack travel in mm : 7.50...7.80 CONSTANT REGULATION Speed rom : 300...450 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 rpm Pressure hPa : 1200 : 10.70...10.90 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.90...10.20 2nd pressure hPa : 350 Rack travel in m: 10.20...10.40 3rd pressure hPa : 420 Rack travel in m: 10.50...10.70 START CUT-OUT

1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 rpm : 1300 Del.quantity cm3/: 140.0...142.0 1000 s: (137.0...145.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1200 Speed rpm : 800 Del.quantity cm3/ : 117.0...121.0 1000 s: (114.0...124.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 69.0...71.0 1000 s: (66.0...74.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.70 Speed rpm : 1340...1350 STARTING FUEL DELIVERY Speed : 100 rom Del.quantity cm3/: 90.0...110.0 1000 s: (86.0...114.0) LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.50...7.80
Del.quantity cm3/: 14.0...20.0
1000 s: (11.0...23.0)
Spread cm3 : 8.00

Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

Start-of-delivery blocking takes place with piston stroke 4.05 mm (as of BCD) at no. 1 cylinder.

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB Edition : 15.06.93 Replaces Test oil : ISO-4113 Combination no. : 9 400 087 472 Injection pump Pump designation : PES6P120A720LS7114 -13. EP type number : 0 412 726 867 Governor Governor design. : RQV300...1050PA1041 Governer no. : 9 420 080 335 Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M447 LA 1st version kW : 257.0 Rated speed : 2103 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 067 Outside diameter x Wali thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Test pressure, bar: 25...27 : 5.20...5.30 : (5.15...5.35) Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 Phasina : 0-60-120-180-240-300 Phasina Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 600 Rack travel in mm: 13.40...13.60 Del.quantity cm3/: 22.5...22.7 100 s: (22.2...23.0) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 300.0Rack travel in mm: 5.8...6.2 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.9) cm3 : 0.8Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rom : 300 : 1.20...1.60 travel mm rpia : 500 2nd speed travel mm 3.00...3.50 3rd speed 900 rpm 5.60...6.10 travel mm rpm : 1100 4th speed travel mm : 7.40...7.90 5th speed rpm : 1210 travel mm : 9.30...9.80 GUIDE SLEEVE POSITION

Control-lever position Degree: -1 rpm : 1140 Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Rack travel in m: 12.50...12.70 3rd pressure hPa : 920 Speed rpm : 600 Perroid pressure h: 780 Del.quantity : 225.0...227.0 Rack travel in m: 13.60...13.70 1000 : (222.0...230.0) 4th pressure hPa : 980 Spread cm3 : 5.00 Rack travel in m: 13.80...13.90 1000 : (9.00) 5th pressure hPa : -Rack travel in m: 9.60...9.90 RATED SPEED START CUT-OUT 1st version Control Lever 1/min : 220 (240) Speed position degrees: 110...118 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 12.20 Speed rpm : 1090...1100 1st version 2nd rack travel in: 4.00 Aneroid pressure h: 1500 rpm : 1165...1195 Speed rpm : 1050 Speed Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) 4th rack travel in: 1300 Speed rpm : 0.00...1.00cm3 : 8.00Spread LOW IDLE 1 1000 s: (12.0) Control lever Aneroid pressure h: 1500 position degrees: 63...71 Speed rpm : 800 Del.quantity cm3/: 237.5...240.5 Testing: 1000 s: (234.5...243.5) Speed cm3 : 8.00 rpm : 100 Spread Minimum rack trave: 8.00 1000 s: (12.0) : 300 rom Aneroid pressure h: -Rack travel in mm : 5.90...6.10 Speed rpm : 500 Del.quantity cm3/: 130.0...132.0 CONSTANT REGULATION 1000 s: (127.0...135.0) cm3 : 8.00 Speed rpm : 325...500 Spread 1000 s: (12.0) TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version BREAKAWAY rpm : 1050 1st speed Rack travel in m: 13.10...13.30 1st version 2nd speed rpm : 800 1mm rack travel less than Rack travel in m: 14.00...14.20 3rd speed rpm : 930 full load rack tr: 12.20 Rack travel in m: 13.60...13.80 Speed rpm : 1090...1100 Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rom 1st version Del.quantity cm3/: 220.0...240.0 Setting 1000 s: (216.0...244.0) : 600 Speed rom Pressure hPa : 780 Remarks: Rack travel mm : 13.40...13.60 • Measurement Speed  $1/\min : 600$ 1st pressure hPa : 240

Rack travel in m: 10.50...10.70

2nd pressure hPa : 560

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.60...3.70 : (3.55...3.75) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : VOI. Edition : 16.08.93 : 11.92 Replaces : ISO-4113 Test oil : 0-60-120-180-240-300 Phasing Combination no. : 9 400 087 473 Tolerance + - ° : 0.30 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS3178-1 EP type number : 0 411 826 764 BASIC SETTING Governor Governor design. : RQV250...950PA921-13 1st speed rom: 700 : 0 421 813 796 Governer no. Rack travel in mm : 14.20...14.30 Customer-spec. information Customer : VOLVO-TRUCK Del.quantity cm3/: 25.9...26.1 Engine : TD 122 FK, FR 100 s: (25.6...26.4) 1st version kW : 287.0 Spread cm3 : 0.5Rated speed : 1900 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0 Test oil Rack travel in mm: 4.8...5.1 inlet temp. °C : 38...42 Del.quantity cm3/: 1.7...2.2 100 s: (1.4...2.5) Overflow valve cm3 : 0.5Spread : 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL rpm : 250 1st speed Openina : 1.00...1.40 travel mm : 207...210 pressure, bar 2nd speed rpm : 450 travel mm : 3.60...4.20 Orifice plate 3rd speed rpm : 700 diameter mm 8,0: travel mm : 6.40...6.60 rpm : 985 4th speed : 8.20...8.40 travel mm Test lines : 1 680 750 075 5th speed rpm : 1060: 9.60...10.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 8.00x2.50x1000 x Length mm Control-lever position

Degree: -1

rpm : 1000 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 259.0...261.0 Del.quantity 1000 : (256.0...264.0)

: 5.00 Spread cm3

1000: (9.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 13.20 Speed rpm : 990...1000 2nd rack travel in: 4.00 rpm : 1070...1100 Speed

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 61...69

Testina:

Speed rpm : 100 Minimum rack trave: 6.50 Speed mari

Rack travel in mm : 4.80...5.10

CONSTANT REGULATION

rpm : 250...380 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm hPa : 1200 Pressure

Rack travel mm : 14.20...14.30

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : -

Rack travel in m: 10.00...10.20

2nd pressure hPa : 100

Rack travel in m: 10.20...10.30

3rd pressure hPa : 865

Rack travel in m: 13.70...13.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 163.0...165.0 1000 s: (160.0...168.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 13.20

Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 270.0...310.0

1000 s: (266.0...314.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.80...5.10 Del.quantity cm3/: 17.5...22.5 1000 s: (14.5...25.5) Spread cm3 : 5.00

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

**B16** 

BOSCH INJ. PUMP TEST SPECIFICATIONS : 5.00...5.10 Prestroke mm : (4.95...5.15)
Rack travel in mm : 9.00...12.00
Firing order : 6-2-4-1-5-3 Note remarks Test sheet : MB : 16.07.93 Edition Replaces : 02.93 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 087 476 Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PES6P120A720LS7181 Time to cyl. no. : 6 -10 EP type number : 0 412 726 870 BASIC SETTING Governor Governor design. : RQV300...1050PA1055 1st speed rpm: 1050 Governer no. : 9 420 080 337 Rack travel in mm : 15.10...15.20 Customer-spec. information Customer : MERCEDES-BENZ Del.quantity cm3/: 26.5...26.7 Engine : 0M447LA 100 s: (26.2...27.0) 1st version kW : 301.8 Spread cm3 : 0.5Rated speed : 2100 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Test oil Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.1...1.7 inlet temp. °C : 38...42 100 s: (0.8...2.0) Overflow valve Spread cm3 : 0.8: 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 105 GUIDE SLEEVE TRAVEL 1st speed rpm : 300 Opening. : 1.20...1.60 travel mm : 207...210 pressure, bar 2nd speed rpm : 500 travel mm : 3.00...3.50 Orifice plate 3rd speed rpm: 900 diameter mm : 0,8 travel mm : 5.60...6.10 rpm : 1100 4th speed : 7.40...7.90 travel mm Test lines : 1 680 750 075 rpm : 1210 5th speed : 9.30...9.80 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 8.00X2.50X1000 Control-lever position Degree: -1 (A) Injection pump setting values Speed rpm : 1140 Rack travel in mm : 15.20...17.80

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

FULL LOAD DELIV. AT FULL LOAD STOP

Aneroid pressure h: 1200 : 265.0...267.0 Del.quantity 1000 : (262.0...270.0) : 5.00 Spread cm31000 : (9.00) RATED SPEED 1st version Control lever position degrees: 111...119 Testina: 1st rack travel in: 14.10 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rom: 1180...1210 Speed 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Control lever position degrees: 64...72 Testina: Speed : 100 rpm Minimum rack trave: 8.00 Speed rpm : 300 Rack travel in mm : 5.90...6.10 CONSTANT REGULATION rpm : 325...475 Speed Aneroid/Altitude Compensator Test 1st version Settina Speed : 600 rpm Pressure hPa : 1200 : 15.10...15.20 Rack travel mm Measurement Speed  $1/\min : 600$ 1st pressure hPa : -Rack travel in m: 9.90...10.20 2nd pressure hPa : 500 Rack travel in m: 11.10...11.30 3rd pressure hPa : 820 Rack travel in m: 13.60...13.90

1st version Aneroid pressure h: 1200 rpm : 700 Del.quantity cm3/: 267.5...271.5 1000 s: (264.5...274.5) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Spread cm3 : 5.001000 s: (9.00) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 14.10 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rom : 100 Del.quantity cm3/: 250.0...270.0 1000 s: (246.0...274.0) LOW IDLE rpm : 300 Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 11.0...17.0 1000 s: (8.0...20.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: **APPLICATION** Navy

Speed

START CUT-OUT

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB

Edition : 16.08.93

Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 477

Injection pump

Pump designation: PES6P120A720RS3256-2

EP type number : 9 400 087 080

Governor

Governor design. : RQV350...1300FA1098

Governer no. : 9 420 080 353

Customer-spec. information

Customer : ERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 125.1 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Coening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 20.00...21.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 4.80...5.40

Del.quantity cm3/: 1.7...2.0

100 s: (1.4...2.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0 Rack travel in mm : 7.5...7.8

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.40...8.60

rpm : 350 2nd speed travel mm

: 1.00...1.50 3rd speed rpm : 650

travel mm : 3.90...4.40

rpm : 1100 4th speed

travel mm : 6.20...6.70

rpm : 1460 5th speed

: 9.30...9.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1360

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 1000 1st version Del.quantity : 17.0...20.0 Aneroid pressure h: 1200 1000 : (14.0...23.0) : 1300 rpm : 2.00 Spread cm3 Del.quantity cm3/: 140.0...142.0 1000 : (3.00) 1000 s: (137.0...145.0) Spread cm3 : 8.00RATED SPEED 1000 s: (12.0) Aneroid pressure h: 1200 1st version Speed rpm : 800 Del.quantity cm3/ : 117.0...121.0 Control lever position degrees: 108...116 1000 s: (114.0...124.0) Spread cm3 : 8.00Testing: 1000 s: (12.0) 1st rack travel in: 9.70 Aneroid pressure h: rpm : 1340...1350 Speed Speed rpm : 500 2nd rack travel in: 4.00 Del.quantity cm3/: 69.0...71.0 rpm : 1425...1455 1000 s: (66.0...74.0) Speed 4th rack travel in: 1550 cm3 : 8.00Spread Speed rom : 0.00...1.00 1000 s: (12.0) LOW IDLE 1 Control lever BREAKAWAY position degrees: 76...84 1st version Testing: 1mm rack travel less than Speed : 250 rpm Minimum rack trave: 9.50 full load rack tr: 9.70 : 350 ripm rpm : 1340...1350 Speed Rack travel in mm : 7.50...7.80 STARTING FUEL DELIVERY CONSTANT REGULATION Speed rpm : 300...450 Speed : 100 rpm Aneroid/Altitude Del.quantity cm3/: 90.0...110.0 1000 s: (86.0...114.0) Compensator Test LOW IDLE 1st version Setting Speed rpm : 350 Speed : 500 rom Rack travel in mm : 7.50...7.80 Del.quantity cm3/: 14.0...20.0 1000 s: (11.0...23.0) Pressure hPa : 1200 Rack travel mm : 10.70...10.90 Spread cm3 : 8.00Measurement 1000 s: (12.00) 1/min: 500 Speed Remarks: 1st pressure hPa : -Rack travel in m: 9.90...10.20 2nd pressure hPa : 350 Rack travel in m: 10.20...10.40 3rd pressure hPa : 420 Rack travel in m: 10.50...10.70 START CUT-OUT Speed 1/min: 270 (290) FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 25...27 Note remarks : 4.60...4.70 Prestroke mm : (4.55...4.75) Test sheet : MB Rack travel in mm : 21.00...0.00 : 16.08.93 Edition Firing order : 6-2-4-1-5-3 : 02.93 Replaces Test oil : ISO-4113 Combination no. : 9 400 087 479 Phasing : 0-60-120-180-240-300 Phasing Tolerance + - ° Injection pump : 0.50 (0.75)Pump designation : PES6P120A720LS7257 -10Time to cyl. no. : 6 EP type number : 9 400 087 086 Governor BASIC SETTING Governor design. : RQV300...1050PA1029 1st speed rom: 700Governer no. : 9 420 080 340 Rack travel in mm : 13.60...13.80 Customer-spec. information Del.quantity cm3/: 24.6...24.8 Customer : MERCEDES-BENZ Engine : OM 447 LA 100 s: (24.3...25.1) 1st version kW : 257.6 Spread cm3 : 0.5: 2100 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0Test oil Rack travel in mm: 5.3...5.6 inlet temp. °C Del.quantity cm3/: 1.1...1.7 : 38...42 100 s: (0.8...2.0) Overflow valve Spread cm3 : 0.8: 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 105 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 1050 : 7.70...7.90 Openina travel mm : 207...210 rpm : 300 pressure, bar 2nd speed : 0.50...1.00 travel mm Orifice plate 3rd speed rpm : 500 : 3.00...3.50 diameter mm : 0,8 travel mm 4th speed rpm : 700 : 5.20...5.70 travel mm Test lines : 1 680 750 075 5th speed rpm : 1165 : 9.20...9.70 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Lenath mm : 8.00x2,50x1000 Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1120 Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP

1st version

SEGINNING OF DELIVERY

Speed rpm : 700 Aneroid pressure h: 1100 : 246.5...248.5 : (243.5...251.5) Del.quantity 1000 Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testina: 1st rack travel in: 12.70 Speed rpm: 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1155...1185 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 78...86 Testing: Speed : 100 rom Minimum rack trave: 8.00 : 300 Speed non Rack travel in mm : 5.10...5.30 CONSTANT REGULATION rpm : 275...425 Speed Ameroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 1100 Pressure Rack travel mm : 13.60...13.80 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.10...10.40 2nd pressure hPa : 400 Rack travel in m: 10.80...11.00

3rd pressure hPa : 720 Rack travel in m: 12.60...12.90 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1100 rpm : 1050 Speed Del.quantity cm3/: 245.0...249.0 1000 s: (242.0...252.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -: 500 Speed rom Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0) cm3 : 5.00Spread 1000 s: (9.00)

1st version 1mm rack travel less than full load rack tr: 12.70 Speed rpm : 1090...1100

: 100 Speed rpm Del.quantity cm3/: 225.0...245.0 1000 s: (221.0...249.0) Remarks:

STARTING FUEL DELIVERY

**BREAKAWAY** 

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 : 1-5- 3-6-2-4 Firing order Note remarks Test sheet : DEZ Edition : 16.07.93 Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 9 400 093 226 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PES6A800410RS2755 EP type number : 9 400 093 005 1st speed rpm: 1150 Governor Governor design. : RSV325...1150A1c1168 Rack travel in mm : 9.30...9.40 : 9 420 083 293 Governer no. Del.guantity cm3/ : 5.4...5.5 Customer-spec, information 100 s: (5.2...5.6) Customer : DEUTZ ARGENTINA cm3 : 0.2Spread : F6L913 Engine 100 s: (0.4) 1st version kW : 96.0 : 2300 rpm : 325.0Rated speed 2nd speed Rack travel in mm: 6.4...6.6 TEST BENCH REQUIREMENTS Del.quantity cm3/: 0.6...0.9 100 s: (0.4...1.1) Test oil cm3 : 0.4Spread inlet temp. °C : 38...42 100 s: (0.6) Overflow valve GUIDE SLEEVE POSITION : 1 419 992 198 Control-lever position Degree: -3 Inlet press., bar: 1.50 rpm : 800 Speed Rack travel in ram : 0.30...1.00 Test nozzle holder assembly : 0 681 343 009 Governor spring pre-tension Click setting x : 6.00Opening pressure, bar : 172...175 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 003 rpm : 1150 Speed : 54.0...55.0 Del.quantity Outside diameter 1000 : (52.5...56.5) x Wall thickness : 2.50 Spread cm3 x Lenath mm : 6.00x2.00x600 1000 : (4.00) (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values Control lever position degrees: 114...122 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing: 1st rack travel in: 8.30

Speed

2nd rack travel in: 4.00

rpm : 1190...1200

Prestroke mm

: 1.90...2.00

: (1.85...2.05)

rpm : 1215...1245 Speed 4th rack travel in: 1380 Speed rpm : 0.30...1.70LOW IDLE 1 Control lever position degrees: 77...85 Setting point w/out bumper spring rpm : 325 Speed Rack travel in mm: 6.0 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 325 Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed rpm : 500...560 TORQUE CONTROL Torque control curve - ist version rpm : 1150 1st speed Rack travel in m: 9.30...9.40 rpm : 500 2nd speed Rack travel in m: 11.10...11.20 4th speed rpm : 800 Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed rpm Del.quantity cm3/: 61.0...64.0 1000 s: (59.5...65.5) rpm:800Speed Del.quantity cm3/ : 56.0,..59.0 1000 s: (54.5...60.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.30 rpm : 1190...1200 Speed STARTING FUEL DELIVERY : 100 Speed rpm Rack travel in mm : 19.00...21.00 Remarks: APPLICATION Tractor (tractor engines)

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Rack travel in mm : 9.00...12.00 BOSCH INJ. PUMP TEST SPECIFICATIONS : 1-5-3-6-2-4 Firing order Note remarks Test sheet : DEZ Edition : 16.07.93 Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75)Combination no. : 9 400 093 227 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PES6A85D410RS2756 EP type number : 9 400 093 006 1st speed rpm: 1150 Governor Governor design. : RSV325...1150A1c1168 Rack travel in mm : 11.30...11.40 : 9 420 083 293 Del.quantity cm3/: 7.2...7.3 Governer no. Customer-spec. information 100 s: (7.0...7.5) Customer : DEUTZ ARGENTINA Spread cm3 : 0.3: BF6I 913 Engine 100 s: (0.7) 1st version kW : 118.0 2nd speed rpm : 325.0 Rack travel in mm : 7.9...8.1 Rated speed : 2300 TEST BENCH REQUIREMENTS Del.quantity cm3/: 0.9...1.3 100 s: (0.7...1.5) Test oil Spread cm3 : 0.4inlet temp. °C : 38...42 100 s: (0.7) Overflow valve GUIDE SLEEVE POSITION : 1 419 992 198 Control-lever position Degree: -3 Inlet press., bar: 1.50 Speed rpm : 800 Rack travel in mm : 0.30...1.00 Test nozzle holder assembly : 0 681 343 009 Governor spring pre-tension Click setting x : 5.00Openina . pressure, bar : 172...175 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 003 rpm : 1150 Speed : 72.5...73.5 Del.quantity Outside diameter 1000 : (70.5...75.5) x Wall thickness Spread : 3.00 cm3 x Length mm : 6.00x2.00x600 1000 : (7.00)(A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant.

1st version Control lever

position degrees: 110...118

Testing: 1st rack travel in: 10.30 Speed rpm : 1190...1200

2nd rack travel in: 4.00

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 1.90...2.00

: (1.85...2.05)

Speed rpm : 1220...1250 4th rack travel in: 1380 Speed rpm : 0.30...1.70LOW IDLE 1 Control lever position degrees: 73...81 Testing: : 100 Speed rpm Minimum rack trave: 19.00 : 325 rpm Rack travel in mm : 7.40...7.60 Rack travel in mm: 2.00 rpm : 540...600 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 11.30...11.40 rpm : 500 2nd speed Rack travel in m: 13.00...13.10 4th speed rpm : 800 Rack travel in m: 12.20...12.50 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 500 Speed Del.quantity cm3/: 78.0...81.0 1000 s: (76.0...83.0) Speed : 800 rpm Del.quantity cm3/ : 75.0...78.0 1000 s: (73.0...80.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.30 rpm : 1190...1200 Speed STARTING FUEL DELIVERY : 100 rpm Rack travel in mm : 19.00...21.00 Remarks: APPLICATION Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-3-5-4-2Note remarks Test sheet : DEZ : 16.07.93 Edition Phasina : 0-72-144-216-288 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 9 400 093 228 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PES5A80D410RS2526 EP type number : 9 400 093 007 1st speed rpm: 1075 Governor Governor design. : RSV325...1075A1C1167 Rack travel in mm : 9.40...9.50 : 9 420 083 292 Governer no. Del.quantity cm3/: 5.2...5.3 Customer-spec. information 100 s: (5.1...5.5) Customer : DEUTZ ARGENTINA cm3 : 0.2Spread Engine : F5L913 100 s: (0.4) 1st version kW : 87.0 Rated speed : 2150 2nd speed rpm : 325.0Rack travel in mm : 6.4...6.6 Del.quantity cm3/ : 0.6...0.9 TEST BENCH REQUIREMENTS 100 s: (0.4...1.1) Test oil cm3 : 0.4 Spread inlet temp. °C : 38...42 100 s: (0.6) Overflow valve GUIDE SLEEVE POSITION : 1 419 992 198 Control-lever position Degree: -3 Inlet press., bar: 1.50 Speed rpm : 800 Rack travel in mm : 0.30...1.00 Test nozzle holder assembly : 0 681 343 009 Governor spring pre-tension Click setting x : 6.75Opening pressure, bar : 172...175 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 003 Speed : 1075 rpm Del.quantity : 52.5...53.5 Outside diameter 1000 : (51.0...55.0) x Wall thickness Spread : 2.50 cm3 x Length mm : 6.00x2.00x600 : (4.00)1000 (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values

Control Lever

position degrees: 113...121

Testing:

1st rack travel in: 8.40

rpm : 1115...1125 Speed

2nd rack travel in: 4.00

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 1.90...2.00

: (1.85...2.05)

Speed rpm : 1150...1180 4th rack travel in: 1320 Speed rpm : 0.30...1.70LOW IDLE 1 Control lever position degrees: 80...88 Setting point w/out bumper spring Speed : 325 rpm Rack travel in mm: 6.0 Testina: Speed : 100 rom Minimum rack trave: 19.00 rpm Speed : 325 Rack travel in mm : 6.40...6.60 Rack travel in mm: 2.00 Speed MON : 510...570 TORQUE CONTROL Torque control curve - 1st version rpm : 1075 1st speed Rack travel in m: 9.40...9.50 2nd speed rpm : 500 Rack travel in m: 11.20...11.30 4th speed rpm : 800 Rack travel in m: 10.40...10.70 FUEL DELIVERY CHARACTERISTICS 1st version Speed man : 500 Del.quantity cm3/: 61.0...64.0 1000 s: (59.5...65.5) Speed : 800 rpm Del.quantity cm3/: 56.5...59.5 1000 s: (55.0...61.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.40 Speed rpm : 1115...1125 STARTING FUEL DELIVERY Speed : 100 rpm Rack travel in mm : 19.00...21.00 Remarks: APPLICATION

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ

: 16.07.93 Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 093 229

Injection pump

Pump designation : PES4A80D410RS2523

EP type number : 9 400 093 008

Governor

Governor design. : RSV325...1075A1C1167

: 9 420 083 292 Governer no.

Customer—spec. information

Customer : DEUTZ ARGENTINA

Engine : F4L913

1st version kW : 56.0 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

: 172...175 pressure, bar

Test Lines : 1 680 750 003

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.90...2.00 Prestroke mm

: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasina : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cy!, no. : 1

BASIC SETTING

1st speed rpm: 1075

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 6.0...6.1

100 s: (5.8...6.2)

cm3 : 0.2Spread

100 s: (0.4)

rpm: 325.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 0.6...0.9

100 s: (0.4...1.1) cm3 : 0.4 Spread

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 7.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

: 60.0...61.0 Del.quantity 1000 : (58.5...62.5)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 9.20

rpm : 1115...1125 Speed

2nd rack travel in: 4.00

Speed rpm : 1160...1190 4th rack travel in: 1320 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 81...89 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 6.0 Testina: Speed : 100 rom Minimum rack trave: 19.00 Speed **rpm** : 325 Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed rpm : 520...580 TORQUE CONTROL Torque control curve - 1st version rpm : 1075 1st speed Rack travel in m: 10.20...10.30 rpm : 500 2nd speed Rack travel in m: 11.00...11.10 rpm : 750 4th speed Rack travel in m: 10.50...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 500 rpm Del.quantity cm3/: 59.5...62.5 1000 s: (58.0...64.0) rpm : 750 Speed Del.quantity cm3/: 57.5...60.5 1000 s: (56.0...62.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.20 rpm : 1115...1125 Speed STARTING FUEL DELIVERY Speed : 100 rpm Rack travel in mm : 19.00...21.00 Remarks: **APPLICATION** Tractor (tractor engines)

CO2

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 a12 : 16.07.93 Edition Replaces : 10.91 Test oil : ISO-4113 Combination no. : 9 400 230 097 Injection pump Pump designation : PES6A1000320/3R\$2691 EP type number : 9 410 230 025 Governor : RSV400...1100A0c2190 Governor design. -8R : 9 420 234 137 Governer no. Customer-spec. information Customer : C.D.C. Engine : 6 CT 8.3 1st version kW : 156.6 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 101 Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test Lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 27...29 CO3

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm: 10.50 Firing order : 1-5-3-6-2-4Phasina : 0-60-120-180-240-300 : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 12.30...12.40 Del.quantity cm3/: 12.4...12.6 100 s: (12.2...12.8) cm3 : 0.4Spread 100 s: (0.6) 2nd speed rpm : 425.0 Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.5...1.9 100 s: (1.2...2.1) Spread cm3 : 0.6100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ?FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed : 124.5...126.5 Del.quantity 1000 : (122.5...128.5) : 4.00 Spread cm3 1000 : (6.50) RATED SPEED 1st version Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.30 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 3rd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1300 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 21...29 Setting point w/out bumper spring rpm : 425 Rack travel in mm: 5.2 Testing: Speed rpm : 100 Minimum rack trave: 19.00 : 425 Speed rpm Rack travel in mm : 5.60...5.80 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.30 Speed rpm : 1140...1150 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 130.0...150.0 1000 s: (125.0...155.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 425 Speed Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5) Spread cm3 : 6.001000 s: (8.00) Remarks: : C.D.C. # 3915959 Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1 BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 10,9 c2 Edition : 13.8.93

Replaces : 3.4.90 Test oil : ISO-4113

Combination no. : 9 400 231 207

Injection nump

Pump designation : PES6P120A720RS6008-1

Governor

Governor design. : RQV300/500...975PA

591-5K

Cust. part no. : \*

Customer—spec. information Customer : MACK

Engine : EE5-350/SCAC

TEST BENCH REQUIREMENTS

Test oil

Outlet temp, °C : 38...42

Overflow valve

: 2 417 413 911

Inlet press., bar: 1.5

Test nozzle holder assembly :

**Opening** 

pressure, bar : 300...308

Test lines : 9 681 230 710

Outside diameter x Wall thickness

x Length mm : 6.35x1.70x990.6

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.5 (0.75)$ 

BASIC SETTING

1st speed rpm: 975

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 20.9...21.1

100 s: (20.7...21.3)

Spread cm3 : 0.45

100 s: (0.75)

2nd speed rpm : 300

Rack travel in mm : 5.30...5.50 Del.quantity cm3/ : 1.7...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.55

100 s: (0.8)

GUIDE SLEEVE POSITION
Control-lever position

Control-lever position
Degree: -1

rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 975

Del.quantity : 209.0...211.0

1000 : (207.0...213.0)

Spread cm3 : 4.5

1000 : (7.5)

LOW IDLE 1 Control lever

position degrees: 17.5...22.5

Testing:

Speed rpm : 250 Minimum rack trave: 9.80 Speed rpm : 400

Rack travel in mm : 4.20...5.60

Rack travel in mm : 2.00

Speed rpm : 710...770

TORQUE CONTROL

Dimension a mm : 1.50

Torque control curve - 1st version

1st speed rpm : 975 Rack travel in m: 14.50 2nd speed rpm : 900

Rack travel in m: 14.45...14.55

3rd speed rpm : 700

Rack travel in m: 14.65...14.75

rpm : 650 4th speed

Rack travel in m: 14.15...14.25

5th speed rpm : 500

Rack travel in m: 13.15...13.25

## FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/ : 234.5...239.5 1000 s: (232.5...241.5)

: 650 Speed rpm

Del.quantity cm3/: 231.0...237.0 1000 s: (229.0...239.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 130.0...170.0

1000 s: (120.0...180.0)

LOW IDLE

Speed rpm : 300 Del.quantity cm3/ : 17.0...23.0

1000 s: (15.0...25.0)

Remarks:

See VDT-I-MAC 002

PLE dimension = 0.740'' - 0.820''

\*The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM

Edition : 16.08.93

Replaces

Test oil : ISO-4113

Combination no. : 9 407 083 284

Injection pump

Pump designation : PES4A80D32ORS1282 EP type number : 9 400 083 056

Governor

Governor design. : RSV350...1150A2C2129

-1R

: 9 420 083 282 Governer no.

Customer-spec. information Customer : MWM

: 0 229-4 Engine

: 53.5 1st version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina (

pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack trayel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 8.80...8.90

Del.quantity cm3/: 4.9...5.0

100 s: (4.8...5.2)

Spread cm3 : 0.2

100 s: (0.4)

rpm : 350.02nd speed Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 0.7...1.0 100 s: (0.5...1.2)

Spread cm3 : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

: 49.5...50.5 Del.quantity

1000 : (48.0...52.0)

: 2.50 Spread cm3

1000 : (4.00)

RATED SPEED

1st version

Control leven position degrees: 93...101

1st rack travel in: 7.90

rpm : 1170...1180 Speed

2nd rack travel in: 4.00

rpm : 1210...1240 Speed

4th rack travel in: 1400

rpm : 0.30...1.70Speed

LOW IDLE 1 Control lever

position degrees: 69...77

Setting point w/out bumper spring

: 350 COM Rack travel in mm : 6.0

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350 Speed

Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00

Speed rpm : 595...655

TORQUE CONTROL

Torque control curve - 1st version

1st speed

st speed rpm : 1150 Rack travel in m: 8.80...8.90

2nd speed rpm : 500

Rack travel in m: 10.60...10.70

rpm : 900 3rd speed

Rack travel in m: 9.80...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/: 53.5...56.5 1000 s: (52.0...58.0)

Speed rpm: 900 Del.quantity\_cm3/: 52.5...55.5

1000 s: (51.0...57.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 7.90

rpm : 1170...1180 Speed

STARTING FUEL DELIVERY

: 100 rom

Rack travel in mm : 19.00...21.00

Testina:

rpm : 350 Speed Rack travel in mm : 6.40...6.60

Del.quantity cm3/: 7.0...10.0 1000 s: (5.0...12.0)

Spread cm3 : 4.001000 s: (6.00)

Remarks:

LOW IDLE

APPLICATION

Tractor (tractor engines)

**cos** 

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test scheet : SOF : 02.08.93 Edition replaces : 07.12.92 Calibrating oil : ISO-4113 Injection pump : VE4/10F2050R364 Type number : 0 460 404 066 Customer Part-No. : Customer-specific information Customer : SOFIM Engine : 8140.67.2580 TEST BENCH REQUIREMENTS Overflow restricti: 1 463 456 303 Calibrating-oil return temp. °C with thermometer : 40.00...48.00 Electronically : 42.00...50.00 Inlet press., bar: 0.30...0.40 Calibrating nozzle-holder assembly : 1 688 901 022 Opening Pressure bar: 130.00...133.00 Test inj. tubing : 1 680 750 073 Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450 Start of delivery Prestroke mm: 0.2 (from BDC): +0.02(0.04)Injection pump setting values Test specifications in parentheses Timing-device travel 1/min: 1000 Speed

Setting value mm: 3.10...3.50

electromagnet Volt: 12

Supply-pump pressure

Full-load del. w/out charge press.: Speed 1/min: 2000 Del. quantity cm3/ 1000s.: 41.00...42.00 Shutoff electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (3.0) Low-idle speed regulation Speed 1/min: 375 Del. quantity cm3/ 1000s.: 15.00...19.00 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0) Full-load speed regulation 1/min: 2200 Speed Del. quantity cm3/ 1000s.: 14.00...20.00 Shutoff electromagnet Volt: 12 Start: 1/min: 100 Speed Del. quantity cm3/: 70.00...100.00 mind 1000s.: 70.00 Shutoff electromagnet Volt: 12 Load-dependent start of delivery: Inj.-qty.dif.measurement: Speed 1/min: 1000 Inj.-qty. cm3/difference 1000s.: 18.50...19.50 # Shutoff electromagnet Volt: 12 SP press.-dif.measurement pompa di mandata (FP) 1.Speed 1/min: 1000 Supply pump pressure difference bar: 0.10...0.30# Shutoff electromagnet Volt: 12 Inspection pump test specifications Test specifications in parentheses

1/min: 1000

Setting value bar: 4.50...5.10

electromagnet Volt: 12

Speed

Shutoff

Shutoff

Timing-device chara	cteristic:	1	Del. quantity cm3/:	
2nd speed 1/min:	1900	T		
		+	5th speed 1/min:	2200
	7.308.10	+	Shutoff	
mm:	(7.008.40)	+	electromagnet Volt:	12
Shutoff		+	Del. quantity cm3/:	
electromagnet Volt:	12	1		(13.0021.00)
		T		
3rd speed 1/min:		†	12th speed 1/min:	2000
	3.103.50	+	Shutoff	
	(2.604.00)	+	electromagnet Volt:	12
Shutofr		1	Del. quyntity cm3/:	41.00 42.00
electromagnet Volt:	12	1		(39.5043.5)
4th speed 1/min:		T		
		T	15th speed 1/min:	1000
	0.801.60	+	Shutoff	
	(0.501.90)	+	electromagnet Volt:	12
Shutoff		+	Del. quantity cm3/:	36.5039.50
electromagnet Volt:	12	+		(35.5040.50)
5th speed 1/min:		1		
		T		000
	8.209.00	+	Shutoff	
	(7.909.30)	+	electromagnet voit:	12
Shutoff		+	Del. quantity cm3/:	33,5036,50
electromagnet Volt:	12	1	1000H	(32.5037.50)
	, 2		20th speed 1/min:	
Committee management		T		JUU
Supply-pump pressur	e characteristic:	+	Shutoff	
_		+	electromagnet Volt:	12
1st speed 1/min:	.2000	+	Del. quantity cm3/:	31.5038.50
Supply-pump		1		(31.0039.00)
	7.007.60	1	10000	(31.0037.00)
Shutoff	1.00.1.11.00	T	Ada ala alaman C.C.	
	4.0	†	Mech. shutoff:	
electromagnet Volt:		+		
2nd speed 1/min:	1000	+	Electr. shutoff:	
Supply-plimp		1		
pressure bar:	4,505.10	1	1st speed 1/min:	775
Shutoff	4,50,	T		
	40	1	Del. quantity cm3/: 1	
electromagnet Volt:		†		(0.003.00)
3rd speed 1/min:	500	+	Shutoff	
Supply-pump		1	electromagnet volt:	-
	3.504.10	1	o to out omagnet votet	
Shutoff	3,30,	1	Tall a dal suamu	
	40	T	Idle delivery:	
electromagnet Volt:	12	†		
		+	1st speed 1/min:	<b>3</b> 75
Overlow quantity at	overflow valve:	+	Shutoff	
•		1	electromagnet Volt:	12
1st speed 1/min:	500	1	Del. quantity cm3/:	
Shutoff	300	T		
	40	†		(12.0022.00)
electromagnet Volt:	12	+	Dispersion cm3/: 3	
Overflow:	41.7083.40	+	1000s.:	(3.0)
quantity cm3/10s:	(26.7098.40)	4-	2nd speed 1/min:	465
2nd speed 1/min:		1	Shutoff	
Shutoff	2000	7		10
	40	T	electromagnet Volt:	
electromagnet Volt:		†	Del. quantity cm3/: (	
	55.60139.00	+	1000s.:	(0.002.00)
quantity cm3/10s:	(40.60154.00)	+	3rd speed 1/min: 4	
		1	Shutoff	
Delivery-quant. and	breakayay chan .	1		10
cervery quarter and	Ni Edhaway Ulai	T	electromagnet Volt:	
		†	Del. quantity cm3/: 8	
_		+	1000s.:	(6.0016.00)
2nd speed 1/min:	2330	+		
Shutoff		1	Load-dependent start	and almit de la lace

Inj.-qty.dif.measurement: 1st speed 1/min: 1000 Inj.-qty. cm3/ : 18.0..24.00 " difference 1000s.: (17.0..25.0) " Shutoff electromagnet Volt: 12 1/min: 1000 2nd speed cm3/: +4.0..6.0Inj.-qty. difference 1000s.: -Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1000 TD-travel : 0.40...0.60 " difference mm: -Shutoff electromagnet Volt: 12 2nd speed 1/min: 1000 TD-travel : 0.80...1.80 ' Automatic starting fuel delivery: 1/min: 400 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...60.00 1000s.: (40.00...60.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 70.00...100.00 1000s.: (70.00...100.00) Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation K mm: -KF mm: 5.6...6.0 MS mm: 1.6...2.0 SVS max. mm: 1.9 mm: 37.9...39.9 Ya Yb mm: 40.9...46.5 Remarks: Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control

lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test scheet : VM Edition : 02.08.93 : 03.12.92 replaces Calibrating oil : ISO-4113 Injection pump : VE4/10F2100L414-1 Type number : C 460 404 073 Customer Part-No. : Customer-specific information Customer : HR 425 CLIRS Engine TEST BENCH REQUIREMENTS Overflow restricti: 1 463 456 303 Calibrating-oil return temp. with thermometer : 40.00...48.00 Electronically : 42.00...50.00 Inlet press., bar: 0.30...0.40 Calibrating nozzle-holder : 1 638 901 022 assembly Opening Pressure bar: 130.00...133.00 Test inj. tubing : 1 680 750 073 Outside diameter : 6.00 × Wall thickness : 2.00 mm: 450 x Length Start of delivery Prestroke mm: --(from BDC): -Injection-pump setting values Test specifications in parentheses Timing-device travel

1/min: 1000 Speed Charge press. hPa: 1000 mm: 1.20...1.60 Setting value

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000 Charge press hPa: 1000 Setting value bar: 4.70...5.30 Shutoff electromagnet Volt: 12 Full-load del. with charge press.: 1/min: 1500 Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 63.50...64.50 Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.01000S.: (3.9)

Full-load del. w/out charge press.:

1/min: 700 Speed Del. quantity cm3/

1000s.: 42.50...43.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 450 Del. quantity cm3/

1000s.: 13.00...17.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2300 hPa: 1000 Charge press

Del. quantity cm3/

1000s.: 40.00...46.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 45.00...75.00

mind 1000s.: 45.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1/min: 1500 Speed cm3/

Inj.-qty. difference 1000s.: 7.00...9.00 #

Shutoff		+	Shutoff
electromagnet Volt:		+	electromagnet Volt: 12
SP pressdif.measu	rement	+	Overflow : 41.7083.40
pompa di mandata (F		1	quantity cm3/10s: (26.7098.40)
1.Speed 1/min:		1	2nd speed 1/min: 2100
Supply pump		1	Charge press. hPa: 1000
pressure		1	Shutoff
	- 0.10.3 #	1	electromagnet Volt: 12
Shutoff	3.11.13.3 <i>n</i>	1	Overflow : 55.60139.00
electromagnet Volt:	12	1	quantity cm3/10s: (40.60154.00)
etectionagnet vote.	12	T	qualitity (1107 105. (40.00.1.194.00)
Inspection-pump tes	t specifications	T	Dalayana great and brookers, then
		Ť	Delivery-quant. and breakaway char.:
Test specifications	in parentneses	†	
Timing device chara	ntonintio.	†	1nd annual 1/min 200
i mining device chara	cteristic:	†	1nd speed 1/min: 700
and amount of factions	2600	†	Charge-air pressure-setting
2nd speed 1/min:		†	point hPa: 350
Charge press hPa:		+	LDA-stroke mm: 7.0
TD travel mm:	7.508.30	+	Shutoff
mm:	(7.208.60)	+	electromagnet Volt: 12 Del. quantity cm3/: 54.0055.00
Shutoff		+	Del. quantity_cm3/: 54.0055.00
electromagnet Volt:		-}-	1 <b>000</b> s.: (52.0057.00)
3rd speed 1/min:		+	3rd speed 1/min: 2550
	1000	+	Charge press. hPa: 1000
	1.201.60	+	Shutoff
	(0.702.10)	+	electromagnet Volt: 12
Shutoff		+	Del. quantity cm3/: 0.008.00
electromagnet Volt:	12	+	1000s.: (0.008.00)
6th speed 1/min:		+	5th speed 1/min: 2300
Charge press. hPa:		1	Charge press. hPa: 1000
	4.004.80	1	Shutoff
	(3.705.10)	1	electromagnet Volt: 12
Shutoff		1	Del. quantity cm3/: 40.0046.00
electromagnet Volt:	12	1	1000s.: (39.0047.00)
ottotti omaginet votti.	16	l	9th speed 1/min: 2100
Supply-pump pressure	- characteristic:	Ι	Charge press. hPa: 1000
coppey pump pressur	character istre.	I	Shutoff
1st speed 1/min:	2100	T	
Charge press. hPa:		T	electromagnet Volt: 12
Supply—pump	1000	T	Del. quantity cm3/: 61.5064.50
	7 40 9 20	Ť	1000s.: (60.0066.00)
	7.608.20	†	12th speed 1/min: 1500
Shutoff	42	<b>†</b>	Charge press. hPa: 1000
electromagnet Volt:		+	Shutoff
2nd speed 1/min:		†	electromagnet Volt: 12
	1000	+	Del. quyntity cm3/: 65.0066.00
Supply-pump	/ 70 F 70	+	1000\$.: (63,5067.50)
	4.705.30	+	18th speed 1/min: 700
Shutoff		+	Charge press. hPa: -
electromagnet Volt:		+	Shutoff
3rd speed 1/min:		+	electromagnet Volt: 12
<u> </u>	1000	+	Del. quantity cm3/: 43.0044.00
Supply-pump		+	1000s.: (41.0046.00)
pressure bar:	3.804.40	+	20th speed
Shutoff		+	Charge press. hPa: 1000
electromagnet Volt:	12	+	Shutoff
-		+	electromagnet Volt: 12
Overlow quantity at	overflow valve:	+	Del. quantity cm3/: 65.0068.00
•		+	1000s.: (63.5069.50)
1st speed 1/min:	700	1	
Charge press. hPa:		1	Mech. shutoff:
		ſ	THE PROPERTY OF THE PARTY OF TH

Electr. shutoff: Automatic starting fuel delivery: 1st speed 1/min: 450 1/min: 400 1st speed Del. quantity cm3/: 0.00...3.00 Shutoff 1000s.: (0.00...3.00) electromagnet Volt: 12 Del. quantity cm3/: 45.00...75.00 1000s.: (45.00...75.00) Shutoff electromagnet volt: -Idle delivery: 1/min: 550 2nd speed Shutoff 1st speed 1/min: 450 electromagnet Volt: 12 Del. quantity cm3/: 25.00...45.00 1000s.: (25.00...45.00) Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.00...17.00 1000s.: (10.00...20.00) Dispersion cm3/: 3.0 1/min: 100 4th speed Shutoff 1000s.: (3.0) electromagnet Volt: 12 Del. quantity cm3/: 45.00...75.00 1/min: 600 2nd speed Shutoff 1000s.: (45.00...75.00) electromagnet Volt: 12 Pel. quantity cm3/: 0.00...5.00 1000s.: (0.00...5.00) 3rd speed 1/min: 500 Shutoff electromagnet: 3rd speed Cut-in Shutoff min voltage : 10.0 electromagnet Volt: 12 Del. quantity cm3/: 1.50...6.50 Rated voltage : 12.0 1000s.: (1.00...7.00) Mounting and assembly dimensions: Load-dependent start of delivery: Designation Inj.-qty.dif.measurement: mm: 3.2...3.4 mm: 5.2...5.6 K KF 1st speed 1/min: 1500 MS mm: 0.6...1.0 Charge press. hPa: -Inj.-qty. cm3/ : -13.0..19.0 " SVS max. mm: 4.3 mm: 7.0 mm: 38.8...40.8 mm: 36.2...45.8 LDA stroke difference 1000s.: -Shutoff electromagnet Volt: 12 Ajustement Potentiometer: TD-travel dif.measurement: correttore anticipo iniezione (SV): Supply voltage 1st speed 1/min: 1500 pot. volt: 5.0 : - 1.40..1.60" mm: -TD-travel Output volt difference pot. volt: 2.31 Shutoff electromagnet Volt: 12 Remarks: Part-load del.at 3rd inj.—qty. Ya = Distance between VE flange and terza fermo della portata speed-control lever in idle stop (EGR set) position scarico) (ARF) Measurement point = edge of control gaz d'échappement-ARF) lever on drive end mm: 12.0 Spacina 1st speed 1/min: 1000 Yb = Distance between VE flange and Charge press. hPa: 1000 speed-control lever in rated speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 42.50...44.50 Measurement point = edge of control lever on distributor-head end

1000s.: (41.00...46.00)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS 1/min: 500 Speed Charge press hPa: 1000 Setting value bar: 6.20...6.80 Timing valve Volt: -Note inst. in remarks column Test scheet : VMA Shutoff Edition : 02.08.93 electromagnet Volt: 12 replaces Calibrating oil : ISO-4113 Full-load del. with charge press.: : VE4/10F2100L503 Injection pump 1/min: 1500 Charge press. hPa: 1000 Type number : 0 460 404 075 Customer Part-No. : Del. quantity cm3/ 1000s.: 65.50...66.50 Timing valve Volt: -Customer-specific information Shutoff electromagnet Volt: 12 Dispersion cm3/: 3.0 Customer : VM Engine : HR 425 SLIRF FORD 1000s.: (3.0) TEST BENCH REQUIREMENTS Full-load del. w/out charge press.: 1/min: 700 Speed Calibrating-oil Del. quantity cm3/ return temp. 1000s.: 43.50...44.50 with thermometer : 40.00...48.00 Timing valve Volt: -Electronically : 42.00...50.00 Shutoff electromagnet Volt: 12 Inlet press., bar : 0.30...0.40 Low-idle speed regulation Calibrating nozzle-holder assembly : 1 688 901 022 1/min: 450 Speed Del. quantity cm3/ Opening 1000s.: 10.00...14.00 Pressure bar: 130.00...133.00 Timing valve Volt: -Shutoff electromagnet Volt: 12 Del. quantity cm3/: 3.0 Test inj. tubing : 1 680 750 073 1000s.: (3.0) Outside diameter : 6.00 x Wall thickness : 2.00 Full-load speed regulation mm: 450 x Length 1/min: 2300 Speed Start of delivery Charge press hPa: 1000 Prestroke mm: -Del. quantity cm3/ (from BDC): -1000s.: 35.00...41.00 Timing valve Volt: -Injection-pump setting values Shutoff Test specifications in parentheses electromagnet Volt: 12 Timing-device travel Start: 1/min: 500 Speed 1/min: 100 Charge press. hPa: 1000 Setting value mm: 7.50...7.90 Del. quantity cm3/: 36.00...60.00 mind 1000s.: 36.00 Fiming valve Volt: - Shutoff Timing valve Volt: - Shutoff electromagnet Volt: 12 electromagnet Volt: 12

Inspection-pump test specifications

Supply-pump pressure

Test specifications in parentheses +	Timing valve Volt: -
Timing device characteristics	Shutoff
Timing-device characteristic:	electromagnet Volt: 12
2nd speed 1/min: 2100	3rd speed 1/min: 500
Charge press hPa: 1000	Charge press. hPa: 1000 Supply-pump
TD travel mm: 9.3010.30	pressure bar: 5.606.20
mm: (9.1010.50)	Timing valve Volt: -
Timing valve Volt: -	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	4th speed 1/min: 150
3rd speed 1/min: 500	Charge press. hPa: 1000
Charge press hPa: 1000	Supply-pump
TD travel mm: 7.507.90	pressure bar: 4.005.60
mm: (7.008.40)	Timing valve Volt: -
Timing valve Volt: -	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Voit: 12	J. 100 1000 1000 1000 1000 1000 1000 100
4th speed 1/min: 150	Overlow quantity at overflow valve:
Charge press hPa: 1000	, , , , , , , , , , , , , , , , , , , ,
TD travel mm: 3.707.30	1st speed 1/min: 500
mm:	Charge press. hPa: 1000
Timing valve Volt: -	Timing valve Volt: -
Shutoff	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
5th speed 1/min: 2100	Overflow : 27.80139.00
Charge press. hPa: 1000	quantity cm3/10s: (12.80154.00)
TD travel mm: 0.001.00	2nd speed 1/min: 2100
mm: -	Charge press. hPa: 1000
Timing valve Volt: 12.0	Timing valve Volt: -
Shutoff	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
6th speed 1/min: 1000 +	Overflow : 55.60166.80
Charge press. hPa: 1000	quantity cm3/10s: (40.60181.80)
TD travel mm: 8.509.50	
mm: (8.309.70)	Delivery-quant. and breakaway char.:
Timing valve Volt: -	
Shutoff	4 - 4 4 / 1
electromagnet Volt: 12	1nd speed 1/min: 700
7.Rotacao 1/min: 1000 Charge press. hPa: 1000	Charge-air pressure-setting
Charge press. hPa: 1000 + TD travel mm: 0.000.60 +	point hPa: 400
mm: (0.000.60)	LDA-stroke mm: 6.7
Timing valve Volt: 12.0	Timing valve Volt: -
Shutoff	Shutoff electromagnet Volt: 12
electromagnet Volt: 12	Del. quantity cm3/: 55.5056.50
	10008:: (53.5058.50)
Supply-pump pressure characteristic:	3rd speed 1/min: 2460
The state of the s	Charge press. hPa: 1000
1st speed 1/min: 2100 +	Timing valve Volt: -
Charge press. hPa: 1000	Shutoff
Supply-pump	electromagnet Volt: 12
pressure bar: 7.708.30	Del. quantity cm3/: 1.009.00
Timing valve Volt: -	1000s.: -
Shutoff	5th speed 1/min: 2300
electromagnet Volt: 12	Charge press. hPa: 1000
2nd speed 1/min: 1000	Timing valve Volt: -
Charge press. hPa: 1000	Shutoff
Supply-pump +	electromagnet Volt: 12
pressure bar: 6.206.80 +	-

Del. quantity cm3/: 35.0041.00	+ Shutoff
1000\$.: (34.0042.00)	+ electromagnet Volt: 12
9th speed 1/min: 2100	+ Del. quantity cm3/: 3.508.50
Charge press. hPa: 1000	† 1000s.: (1.0011.00)
Timing valve Volt: -	
Shutoff electromagner Volt: 12	+ Part-load del.at 3rd injqty.
Del. quantity cm3/: 62.5065.50	+ terza fermo della protata + stop (EGR set)
1000S.: (61.0067.00)	scarico) (ARF)
12th speed 1/min: 1500	gaz d'échappement-ARF)
Charge press. hPa: 1000	+ Spacing mm: 12.0
Timign valve Volt: -	+
Shutoff	† 1st speed 1/min: 1000
electromagnet Volt: 12	Charge press. hPa: 1000
Del. quyntity cm3/: 65.5066.50 1000s.: (64.0068.00)	Timing valve Volt: -
18th speed 1/min: 700	f Shutoff
Charge press. hPa: -	+ electromagnet Volt: 12 + Del. quantity cm3/: 49.0051.00
Timing valve Volt: -	1000s.: (47.5052.50)
Shutoff	10003 (47.5052.50)
electromagnet Volt: 12	+ Automatic starting fuel delivery:
Del. quantity cm3/: 43.5044.50	+
1000\$.: (41.5046.50)	+ 1st speed 1/min: 400
20th speed 1/min: 700	† Timing valve Volt: -
Charge press. hPa: 1000	+ Shutoff
Timing valve Volt: - Shutoff	+ electromagnet Volt: 12
electromagnet Volt: 12	+ Del. quantity cm3/: 40.0070.00 + 1000s.: (40.0070.00)
Del. quantity cm3/: 67.5070.50	10003.1 (40.001.1.70.007
10005.: (66.0072.00)	2nd speed 1/min: 550
	Timing valve Volt: -
Mech. shutoff:	+ Shutoff
	+ electromagnet Volt: 12
Electr. shutoff:	+ Del. quantity cm3/: 25.0045.00
1st speed 1/min: /50	† 1000s.: (25.0045.00)
1st speed 1/min: 450 Del. quantity cm3/: 0.003.00	† 4th speed 1/min: 100
10005.: (0.003.00)	Timing valve Volt: -
Shutoff	Shutoff
electromagnet volt: -	+ electromagnet Volt: 12
Timing valve Volt: -	- Del. quantity cm3/: 36.0060.00
	† 1000s.: (36.0060.00)
Idle delivery:	+
1st speed 1/min. /FD	+ Shutoff electromagnet:
1st speed 1/min: 450 Timing valve Volt: -	T Cut-in
Shutoff	min voltage : 10.0
electromagnet Volt: 12	Rated voltage : 12.0
Del. quantity cm3/: 10.0014.00	Hated Voltage . 12:0
1000s.: (7.0017.00)	+ Mounting and assembly dimensions:
Dispersion cm3/: 3.0	+
1000S.: (3.0)	+ Designation
2nd speed 1/min: 800	+ K mm: 3.23.6
Timing valve Volt: - Shutoff	+ KF mm: 5.45.8 + MS mm: 0.81.2
electromagnet Volt: 12	+ MS mm: 0.81.2 + SVS max. mm: 5.9
Del. quantity cm3/: 1.506.50	LDA stroke mm: 6.7
10005.: (0.008.00)	+ Ya mm: 43.245.2
3rd speed 1/min: 500	+ Yb mm: 26.933.9
Timing valve Volt: -	+
	•

Ajustement Potentiometer:

Supply voltage

pot. volt: 5.0

Output volt

pot. volt: 2.31

Remarks:

Ya = Distance between VE flange and speed-control lever in idle position Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES
Calibrating—oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C

:35...40

Dwell speed, 1/min :1100 Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2200
Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation

speed 1/min :2200 Output temperature, °C :48 Measurement temperature, °C:46 Test speed, 1/min :800...1199

Temperature stabilisation

speed 1/min :2200/100

Output temperature, °C :45 Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation

speed 1/min :100 Output temperature, °C :42 Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation

speed 1/min :100 Output temperature, °C :41 Measurement temperature, °C:43

Note inst. in remarks column

Test scheet : SOF

Edition : 02.08.93 replaces : 07.93 Calibrating oil : ISO-4113

Injection pump : VE4/10F2100R518 : 0 460 404 077 Type number

Customer Part-No. :

Customer-specific information Customer : IVECO-SOFIM

Engine : 8140.67.2200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery

Prestroke mm: 0.2

 $(from BDC): \leftarrow 0.2(0.04)$ 

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1500 Speed

Setting value mm: 4.40...4.60

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1500 Speed

Setting value bar: 6.40...7.00

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500

Del. quantity cm3/

1000s.: 42.50...43.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0

1000s.: (3.0)

Low-idle speed regulation

Speed 1/min: 375

Del. quantity cm3/

1000s.: 12.00...16.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2300

Del. quantity cm3/

1000s.: 27.00...31.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 65.00...105.00

mind 1000s.: 65.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1500

Inj.-qty. cm3/

difference 1000s.: - 16.0..18.0 #

Shutoff

electromagnet Volt: 12 SP press.-dif.measurement pompa di mandata (FP) 1.Speed 1/min: 1500

Supply pump

pressure

difference bar: - 0.1...0.3 #

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

		+	electromagnet Volt: 12
Timing-device chara	cteristic:	‡	Del. quantity cm3/: 0.003.00 1000S.: (0.003.00)
2nd speed 1/min:	1800	+	5th speed 1/min: 2300
	6.106.70	+	Shutoff
	(5.707.10)	+	electromagnet Volt: 12
Shutoff	43	+	Del. quantity cm3/: 27.0031.00
electromagnet Volt: 3rd speed 1/min:	1450	†	1000\$.: (23.0035.00)
TD travel mm:		†	9th speed 1/min: 2100 Shutoff
	(1.502.90)	Ι	electromagnet Volt: 12
Shutoff	(1.30)	1	Del. quantity cm3/: 42.5045.50
electromagnet Volt:	12	1	1000s.: (41.5046.50)
5th speed 1/min:	2100	+	12th speed 1/min: 1500
TD travet mm:	6.907.70	+	Shutoff
	(6.608.00)	+	electromagnet Volt: 12
Shutoff	43	+	Del. quyntity cm3/: 42.5043.50
electromagnet Volt: 6th speed 1/min:		†	10005.: (41.0045.00)
	4.404.60	†	15th speed 1/min: 1000 Shutoff
	(3.905.10)	I	electromagnet Volt: 12
Shutoff	(3.703.10)	I	Del. quantity cm3/: 39.5042.50
electromagnet Volt:	12	+	1000\$.: (38.5043.50)
J		+	20th speed 1/min: 600
Supply-pump pressure	e characteristic:	+	Shutoff
	-15-	+	electromagnet Volt: 12
1st speed 1/min:	2100	+	Del. quantity cm3/: 34.5038.50
Supply-pump	9.50 0.40	†	1000s.: (33.5039.50)
pressure bar: Shutoff	8.509.10	†	Mach abutaff.
electromagnet Volt:	12	I	Mech. shutoff:
2nd speed 1/min:	1500	I	Electr. shutoff:
Supply-pump	,,,,,,	1	Eccor. Shatorr.
pressure bar:	6.407.00	+	1st speed 1/min: 375
Shutoff		+	Del. quantity cm3/: 0.003.00
electromagnet Volt:	12	+	1000s.: (0.003.00)
3rd speed 1/min:	600	+	Shutoff
Supply-pump pressure bar:	7 20 7 90	†	electromagnet volt: -
Shutoff	3.203.00	†	Tallo dot ivonice
electromagnet Volt:	12	I	Idle delivery:
occoronagice voce.	12	1	1st speed 1/min: 375
Overlow quantity at	overflow valve:	1	Shutoff
		+	electromagnet Volt: 12
1st speed 1/min:	600	+	Del. quantity cm3/: 12.0016.00
Shutoff	40	+	1000s.: (9.0019.00)
electromagnet Volt:		+	Dispersion cm3/: 3.0
Overflow : quantity cm3/10s:	41.7083.40	†	1000s.: (3.0)
2nd speed 1/min:		I	2nd speed 1/min: 465 Shutoff
Shutoff	2130	I	electromagnet Volt: 12
electromagnet Volt:	12	+	Del. quantity cm3/: 0.003.00
Overflow:	55.60139.00	+	1000s.: (0.003.00)
quantity cm3/10s:	(40.60154.00)	+	
A		+	Load-dependent start of delivery:
Decivery-quant. and	preakaway char.:	†	Inj.—qty.dif.measurement:
		†	1st speed 1/min: 1000
2nd speed 1/min:	2600	I	1st speed
Shutoff		+	difference 1000s.: -
		•	

Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 Inj. aty. cm3/: + 0.0..2.0 " difference 1000s.: -TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1500 TD-travel : - 0.4...0.6 " difference mm: -Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 TD-travel : - 0.5..1.3 ' difference mm: -Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00...85.00 1000s.: (55.00...85.00) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.00...45.00 1000\$.: (25.00...45.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 65.00...105.00 1000s.: (65.00...105.00) Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation K mm: -KF mm: 5.6...6.0 mm: 1.7...1.9 MS Ya mm: 37.9...39.9 Yb mm: 41.8...47.0 Remarks: : Ya = Distance between VE flange and

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

position

speed-control lever in idle

BOSCH-INJ. -PUMP TEST SPECIFICATIONS Note inst. in remarks column Test scheet : VMA Edition : 02.08.93 replaces Calibrating oil : ISO-4113 Injection pump : VE4/10F2100L553 : 0 460 404 078 Type number Customer Part-No. : Customer-specific information Customer : 425 CLIRZ/CLIRX Engine TEST BENCH REQUIREMENTS Overflow restricti: 1 463 456 344 Calibrating-oil °C return temp. with thermometer : 44.00...46.00 Electronically Inlet press., bar : 0.30...0.40 Calibrating nozzle-holder assembly : 1 688 901 022 Opening bar: 130.00...133.00 Pressure Test inj. tubing : 1 680 750 073 Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450 Start of delivery Prestroke mm: -(from BDC): -Injection pump setting values Test specifications in parentheses Timing-device travel 1/min: 500 Speed Charge press. hPa: 1000 Setting value mm: 7.50...7.90 Timing valve Volt: -

Speed 1/min: 500 Charge press hPa: 1000 Setting value bar: 5.60...6.20 Timing valve Volt: -Shutoff electromagnet Volt: 12 Full-load del. with charge press.: 1/min: 1500 Speed Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 67.50...68.50 Timing valve Volt: -Shutoff electromagnet Volt: 12 cm3/: 3.0 Dispersion 1000s.: (3.0) Full-load del. w/out charge press.: Speed 1/min: 700 Del. quantity cm3/ 1000s.: 44.50...45.50 Timing valve Volt: -Shutoff electromagnet Volt: 12 Low-idle speed regulation 1/min: 450 Del. quantity cm3/ 1000s.: 10.00...14.00 Timing valve Volt: -Shutoff electromagnet Volt: 12 Del. quantity cm3/: 3.0 10005:: (3.0) Full-load speed regulation 1/min: 2300 Charge press hPa: 1000 Del. quantity cm3/ 1000s.: 46.00...52.00 Timing valve Volt: -Shutoff electromagnet Volt: 12 Start: Speed 1/min: 100 Del. quantity cm3/: 36.00...60.00 1000s.: 36.00 Timing valve Volt: -Shutoff electromagnet Volt: 12

Supply—pump pressure

Shutoff

electromagnet Volt: 12

Inspection pump test		Supply-pump	
Test specifications	in parentheses +	pressure bar:	
	· †	Timing valve Volt:	-
Timing-device characterist	cteristic:	Shutoff	
20. 1 . 1 . 41 .	1	electromagnet Volt:	
2nd speed 1/min:		3rd speed 1/min:	
Charge press hPa:		Charge press. hPa:	1000
	9.3010.30	Supply-pump	
	(9.1010.50)	pressure bar:	
Timing valve Volt: Shutoff	+	Timing valve Volt: Shutoff	-
electromagnet Volt:		electromagnet Volt:	12
3rd speed 1/min:		4th speed 1/min:	
Charge press hPa:		Charge press. hPa:	1000
	7.507.90	Supply-pump	
	(7.008.40)	pressure bar:	4.005.60
Timing valve Volt:	- +	Timing valve Volt:	_
Shutoff	+	Shutoff	
electromagnet Volt:		electromagnet Volt:	12
4th speed 1/min:			
Charge press hPa:	1000	Overlow quantity at	overflow valve:
TD travel mm:	3.707.30	•	
mn:	4	1st speed 1/min:	500
Timing valve Volt:	- +	Charge press. hPa:	1000
Shutoff	+	Timing valve Volt:	-
electromagnet Volt:	12 +	Shutoff	
5th speed 1/min:		electromagnet Volt:	12
Charge press. hPa:	1000 +	Overflow :	27.80139.00
TD travel mm:	0.001.00	quantity cm3/10s:	
mn:	- +	2nd speed 1/min:	
Timing valve Volt:	12.0	Charge press. hPa:	1000
Shutoff	+	Timing valve Volt:	
electromagnet Volt:		Shutoff	
6th speed 1/min:		electromagnet Volt:	12
Charge press. hPa:	160C +	Overflow :	55.60166.80
	8.509.50	quantity cm3/10s:	(40.60181.80)
	(8.309.70)	•	
Timing valve Volt:	- +	Delivery-quant. and	breakaway char .:
Shutoff	+	•	•
electromagnet Volt:	12 +		
7.Rotacao 1/min:	1000	1nd speed 1/min:	700
Charge press. hPa:	1000	Charge-air pressure	-setting
	0.000.60	point hPa:	
mm:	(0.000.60)	Timing valve Volt:	-
Timing valve Volt:	12.0	Shutoff	
Shutoff	+	electromagnet Volt:	12
electromagnet Volt:	12 🗼	Del. quantity cm3/:	
	+	1000s.:	(56.0061.00)
Supply-pump pressure	e characteristic:	3rd speed 1/min:	
	<u> </u>	Charge press. hPa:	
1st speed 1/min:	2100	Timing valve Volt:	-
Charge press. hPa:		Shutoff	
Supply-pump	1	electromagnet Volt:	12
	7.708.30	Del. quantity cm3/:	
Timing valve Volt:		1000	(5.0015.00)
Shutoff	Ĺ	5th speed 1/min:	
electromagnet Volt:	12	Charge press. hPa:	
2nd speed 1/min:	1000	Timing valve Volt:	
Charge press. hPa:		Shutoff	
go p. 3301 u.		electromagnet Volt:	12

9th speed 1/min: Charge press. hPa: Timing valve Volt:	(45.0053.00) 2100 1000	+++++++++++++++++++++++++++++++++++++++	Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.507.50 1000S.: (0.0010.00)
12th speed 1/min: Charge press. hPa: Timign valve Volt:	62,0065.00 (60.5066.50) 1500 1000	+ + + + + + + + + + + + + + + + + + + +	Part-load del.at 3rd injqty. terza fermo della portata stop (EGR set) scarico) (ARF) gaz d'échappement-ARF) Spacing mm: 12.0
18th speed 1/min: Timing valve Volt: Shutoff	67.5068.50 (66.0070.00) 700	+ + + + + + + + + + + + + + + + + + + +	1st speed 1/min: 1000 Charge press. hPa: 1000 Timing valve Volt: - Shutoff electromagnet Volt: 12 Del. quantity cm3/: 49.0051.00 1000s.: (47.5052.50)
20th speed 1/min: Charge press. hPa: Timing valve Volt:	44.5045.50 (42.5047.50) 700 1000	+++++	Automatic starting fuel delivery:  1st speed   1/min: 400 Timing valve Volt: - Shutoff
Shutoff electromagnet Volt: Del. quantity cm3/: 1000s.:		† + + +	electromagnet Volt: 12 Del. quantity cm3/: 40.0070.00 1000S.: (40.0070.00)
Mech. shutoff:		†	2nd speed 1/min: 550 Timing valve Volt: - Shutoff
Electr. shutoff:  1st speed 1/min:		+	electromagnet Volt: 12 Del. quantity cm3/: 25.0045.00 1000s.: (25.0045.00)
Del. quantity cm3/: 1000s.: Shutoff electromagnet volt: Timing valve Volt:	(0.003.00)	† † † †	4th speed 1/min: 100 Timing valve Volt: - Shutoff electromagnet Volt: 12
Idle delivery:		†	Del. quantity cm3/: 36.0060.00 1000s.: (36.0060.00)
1st speed 1/min: Timing valve Volt: Shutoff			Shutoff electromagnet: Cut-in
<pre>electromagnet Volt: Del. quantity cm3/:</pre>		†	min voltage : 10.0 Rated voltage : 12.0
Dispersion cm3/: 1000s.:	3.0 (3.0)	+	Mounting and assembly dimensions:
2nd speed 1/min: Timing valve Volt: Shutoff electromagnet Volt:	-	+ + + + + + + + + + + + + + + + + + + +	Designation  K mm: 3.23.4  KF mm: 5.25.6  MS mm: 0.61.0
Decoquantity cm3/: 1000s.: 3rd speed 1/min:	1.506.50 (0.008.00) 500	+++++++++++++++++++++++++++++++++++++++	Ya mm: 29.531.5 Yb mm: 47.057.0
Timing valve Volt:	•	‡	Ajustement Potentiometer:

Supply voltage volt: 5.0 pot. Output volt pot. volt: 2.31 Remarks: Ya = Distance between VE flange and speed-control lever in idle position Measurement point = edge of control lever on drive end Yb = Distance between VE flange and speed-control lever in rated speed position Measurement point = edge of control lever on distributor-head end Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES! Information additionally required for testing fuel-injection pump: TEST PREREQUISITES Calibrating-oil return temperature with thermometer, °C Calibrating-oil inlet temperature, °C :35...40 Dwell speed, 1/min :1100 Feedback voltage, mV SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates Test speed, 1/min Temperature stabilisation :<500 speed 1/min :2200 Output temperature, °C :51 Measurement temperature, °C:49 Test speed, 1/min Temperature stabilisation :500...799 speed 1/min :2200

Output temperature, °C Measurement temperature, °C:45 :1200...1700 Test speed, 1/min Temperature stabilisation :100 speed 1/min Output temperature, °C :42 Measurement temperature, °C:44 Test speed, 1/min : 1700 Temperature stabilisation speed 1/min :100 Output temperature, °C :41 Measurement temperature, °C:43

Output temperature, °C

Temperature stabilisation

Test speed, 1/min

speed 1/min

Measurement temperature, °C:46

:48

:800...1199

:2200/100

Note inst. in remarks column

Test scheet : VMA : 02.08.93 Edition : 07.93 replaces

Calibrating oil : ISO-4113

Injection pump : VE4/10F2100R557 Type number : 0 460 404 079

Customer Part-No. :

Customer-specific information Customer : IVECO-SOFIM

Engine : 8140.67.2700

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly

: 1 688 901 022

Opening

Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1500 Speed

Setting value mm: 4.40...4.60

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1500 Speed

Setting value bar: 6.40...7.00

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500

Del. quantity cm3/

1000s.: 42.50...43.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000S.: (3.0)

Low-idle speed regulation

1/min: 375

Del. quantity cm3/ 1000S.: 12.00...16.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

1/min: 2300 Speed

Del. quantity cm3/

1000s.: 27.00...31.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 65.00...105.00

mind 1000s.: 65.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1500

cm3/Ini.—aty.

difference 1000S.: - 16.0...18.0 #

Shutoff

electromagnet Volt: 12 SP press.-dif.measurement pompa di mandata (FP) 1. Speed 1/min: 1500

Supply pump pressure

difference bar: - 0.1...0.3 #

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device chara	cteristic:	Del. quantity cm3/:	
	6.106.70	5th speed 1/min: Shutoff	2300
Shutoff	(5.707.10)	electromagnet Volt: Del. quantity cm3/:	27.0031.00
electromagnet Volt: 3rd speed 1/min: TD travel mm:		9th speed 1/min: Shutoff	(23.0035.00) 2100
	(1.502.90)	electromagnet Volt: Del. quantity cm3/:	12 42 50 45 50
electromagnet Volt: 5th speed 1/min:			(41.5046.50)
TD travel mm:	6.907.70 (6.608.00)	Shutoff electromagnet Volt:	
Shutoff electromagnet Volt:		Del. quyntity cm3/: 1000s.:	42.5043.50 (41.0045.00)
	4.404.60	15th speed 1/min: Shutoff	
Shutoff electromagnet Volt:	(3.905.10)	electromagnet Volt: Del. quantity cm3/:	39.5042.50
Supply-pump pressure	· <del> </del> -	20th speed 1/min: Shutoff	(38.5043.50) 600
1st speed 1/min:	+	electromagnet Volt: Del. quantity cm3/:	
Supply-pump	8.509.10	1000s.:	(33.5039.50)
Shutoff	+	Mech. shutoff:	
electromagnet Volt: 2nd speed 1/min: Supply-pump		Electr. shutoff:	
	6.407.10	1st speed 1/min: Del. quantity cm3/:	
electromagnet Volt: 3rd speed 1/min:		1000s.: Shutoff	(0.003.00)
	3.203.80	electromagnet volt:	-
Shutoff electromagnet Volt:	12	Idle delivery:	
Overlow quantity at	overflow valve:	1st speed 1/min: Shutoff electromagnet Volt:	•
1st speed 1/min: Shutoff	600	Del. quantity cm3/:	
electromagnet Volt: Overflow	41.7083.40	Dispersion cm3/: 1000s.:	3.0 (3.0)
quantity cm3/10s: 2nd speed 1/min:		2nd speed 1/min: Shutoff	
Shutoff electromagnet Volt: Overflow:	12 55.60139.00	electromagnet Volt: Del. quantity cm3/: 1000s.:	
quantity cm3/10s:		Load-dependent stam	
Delivery-quant. and	breakaway char.:	Inj.—qty.dif.measure	ement:
2nd speed 1/min: Shutoff	2600	1st speed 1/min: Injqty. cm3/ : difference 1000S.:	- 14.022.0"

Shutoff electromagnet Volt: 12 1/min: 1500 2nd speed cm3/: + 0.0...2.0 " Inj.-aty. difference 1000s.: -Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1/min: 1500 1st speed TD-travel : - 0.4..0.6 " mn: difference Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 TD-travel : - 0.5..1.3 ' difference Automatic starting fuel delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00...85.00 1000s.: (55.00...85.00) 1/min: 500 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.00...45.00 1000s.: (25.00...45.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 65.00...105.00 1000s.: (65.00...105.00) Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation K mm: -KF mm: 5.6...6.0 mm: 1.7...1.9 mm: 37.9...39.9 MS Ya mm: 41.8...47.0 Yb Remarks: : Ya = Distance between VE flange and

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position Measurement point = edge of control lever on distributor-head end

position

speed-control lever in idle

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column : VWW 2,4 C5 : 02.08.93 Test scheet Edition replaces : 19.12.86 Calibrating oil : ISO-4113 Injection pump : VE6/10F2400L116-6 Type number : 0 460 405 054 Customer Part-No. : Customer-specific information Customer Engine : 087T-Vol (Aut.) TEST BENCH REQUIREMENTS Overflow restricti: 1 463 456 303 Calibrating-oil °C return temp. with thermometer : 40.00...48.00 : 42.00...50.00 Electronically Inlet press., bar: 0.30...0.40 Calibrating nozzle-holder assembly : 1 688 901 000 Opening Pressure bar: 147.00...150.00 Test inj. tubing : 1 680 750 017 Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840 Start of delivery Prestroke mm: -(from BDC): -Injection-pump setting values Test specifications in parentheses Timing-device travel 1/min: 1500 Speed

Setting value bar: 5.70...6.30 Shutoff electromagnet Volt: 12 Full-load del. with charge press.: 1/min: 1500 Speed Charge press. hPa: 750 Del. quantity cm3/ 1000s.: 42.60...43.60 Shutoff electromagnet Volt: 12 cm3/: 2.5Dispersion 1000s.: (3.0) Full-load del. w/out charge press.: Speed 1/min: 600 Del. quantity cm3/ 1000s.: 26.70...27.70 Shutoff electromagnet Volt: 12 Low-idle speed regulation 1/min: 415 Del. quantity cm3/ 1000s.: 7.00...9.00 Shutoff electromagnet Volt: 12 bel. quantity cm3/: 2.0 1000s.: (3.0) Full-load speed regulation Speed 1/min: 2675 hPa: 750 Charge press Del. quantity cm3/ 1000s.: 11.00...15.00 Shutoff electromagnet Volt: 12 Start: Speed 1/min: 100 Del. quantity cm3/: 40.00...70.00 mind 1000s.: 40.60 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2400 Charge press hPa: 750

1/min: 1500

Charge press hPa: 750

Speed

Shutoff

Charge press. hPa: 750

electromagnet Volt: 12

Supply-pump pressure

Setting value mm: 1.50...1.90

TD travel mm:	3.704.50	+	Shutoff	
	(3.404.80)	<del>-</del>	electromagnet Volt:	
Shutoff		+	Del. quantity cm3/:	33.5034.50
electromagnet Volt:		+		(31.0037.00)
3rd speed 1/min:		+	2nd speed 1/min:	2850
Charge press hPa:		+	Charge press. hPa:	750
	1.501.90	+	Shutoff	
	(1.002.40)	+	electromagnet Volt:	
Shutoff		+	Del. quantity cm3/:	0.003.00
electromagnet Volt:		+		(0.003.00)
4th speed 1/min:		+	5th speed 1/min:	2675
Charge press hPa:		+	Charge press. hPa:	750
	0.301.10	+	Shutoff	
	(0.001.40)	+	electromagnet Volt:	12
Shutoff		+	Del. quantity cm3/:	
electromagnet Volt:	12	+	1000s.:	(9.0017.00)
		+	8th speed 1/min:	2575
Supply-pump pressur	e characteristic:	4-	Charge press. hFa:	750
		+	Shutoff	
1st speed 1/min:	600	+	electromagnet Volt:	12
Charge press. hPa:	750	+	Del. quantity cm3/:	
Supply-pump		+		(17.0029.00)
pressure bar:	3.303.90	1	9th speed 1/min:	
Shutoff		1	Charge press. hPa:	
electromagnet Volt:	12	+	Shutoff	
2nd speed 1/min:		+	electromagnet Volt:	12
Charge press. hPa:	750	1	Del. quantity cm3/:	36,3038.30
Supply-pump		1	1000s.:	(35.1039.50)
pressure bar:	5.706.30	1	12th speed 1/min:	1500
Shutoff		1	Charge press. hPa:	
electromagnet Volt:	12	1	Shutoff	
3rd speed 1/min:		1	electromagnet Volt:	12
Charge press. hPa:		1	Del. quyntity cm3/:	
Supply-pump		+		(40.9045.3)
	8.008.60	1	18th speed 1/min:	
Shutoff		1	Shutoff	
electromagnet Volt:	12	1	electromagnet Volt:	12
5		+	Del. quantity cm3/:	26.7027.70
Overlow quantity at	overflow valve:	1		(24.2030.20)
· · · · ·		1	20th speed 1/min:	600
1st speed 1/min:	600	1	Charge press. hPa:	750
Shutoff		+	Shutoff	
electromagnet Volt:	12	+	electromagnet Volt:	12
Overflow :	41.7083.40	+	Del. quantity cm3/:	
quantity cm3/10s:	(27.8097.30)	1		(34.0040.00)
2nd speed 1/min:		+		
Charge press. hPa:	750	+	Mech. shutoff:	
Shutoff		1	Mech. Abstellung:	
electromagnet Volt:	12	1	,	
	55.60152.90	+	1st speed 1/min:	2400
quantity cm3/10s:	(41.70152.90)	+	Charge press. hPa:	
•		+	Del. quantity cm3/:	
Delivery-quant. and	breakaway char.:	+	1000s.:	(0.003.00)
- ,	•	+	Shutoff	· · · · · · · · · · · · · · · ·
		+	electromagnet volt:	12
1nd speed 1/min:	800	+		· <del>-</del>
Charge-air pressure		+	Electr. shutoff:	
point hPa:		+		
	4.8	+	1st speed 1/min:	415
		+	Charge press. hPa:	

Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1st speed 1/min: 415 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.00...9.00 1000s.: (4.00...12.00) cm3/: 2.0 Dispersion 1000s.: (3.0) 1/min: 750 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1st speed 1/min: 230 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.00...70.00 1000s.: (30.00...70.00) 2nd speed 1/min: 430 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 10.00...30.00 1000s.: (10.00...30.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...70.00 1000s.: (40.00...70.00) Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation K mm: 3.2...3.4 KF mm: 6.4...6.8 mm: 1.9...2.1 MS mm: 2,4 SVS max. LDA stroke mm: 4.8 mm: 8.5...10.5 Ya Yb mm: 71.0...89.3 Remarks:

Ya = Distance between VE flange and

D<sub>04</sub>

speed-control lever in idle position Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Note inst. in remarks column

Test scheet : VWW : 10.93 Edition

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/10F2400L116-7 Type number : 0 460 406 076

Customer Part-No. :

Customer-specific information

Customer

: 072.4 (2.4L.) VOLVO Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1500 Speed Charge press. hPa: 750

mm: 1.50...1.90 Setting value

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1500 Speed Charge press hPa: 750

Setting value bar: 5.70...6.30

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 750

Del. quantity cm3/

1000s.: 42.60...43.60

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5 1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600

Del. quantity cm3/

1000s.: 26.70...27.70

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 430

Del. quantity cm3/

1000s.: 8.00...10.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.0 1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2675 Charge press hPa: 750 Del. quantity cm3/ 1000s.: 11.00...15.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100

Del. quantity cm3/: 40.00...70.00

mind 1000s.: 40.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2400 hPa: 750 Charge press

mm: 3.70...4.50 TD travel mm: (3.40...4.80)

Shutoff

electromagnet Volt: 12

3rd speed 1/min: Charge press hPa:	750	‡	Charge press. hPa: Shutoff	
	1.501.90 (1.002.40)	†	electromagnet Volt: Del. quantity cm3/:	0.003.00
	10	Ť		(0.003.00)
electromagnet Volt: 4th speed 1/min:		†	5th speed 1/min:	
		Ť	Charge press. hPa:	700
		†	Shutoff	40
	0.301.10	†	electromagnet Volt:	
	(0.001.40)	†	Del. quantity cm3/:	
Shutoff	40	+		(9.0017.00)
electromagnet Volt:	12	†	8th speed 1/min:	
Supply-pump pressure	e characteristic:	†	Charge press. hPa: Shutoff	
1st speed 1/min:	400	Ť	electromagnet Volt:	12 00 00 00
		T	Del. quantity cm3/:	(47,00,20.00
Charge press. hPa:	<i>‡</i> 20	†	TUUUS.:	(17.0029.00)
Supply-pump	3.303.90	†	9th speed 1/min:	
pressure bar: Shutoff	5.305.90	†	Charge press. hPa:	750
	40	†	Shutoff	40
electromagnet Volt:		†	electromagnet Volt:	
2nd speed 1/min:		†	Del. quantity cm3/:	36.3038.30
Charge press. hPa:	750	†		(35.1039.50)
Supply-pump	F 70 / 70	+	12th speed 1/min:	
	5.706.30	†	Charge press. hPa:	750
Shutoff		+	Shutoff	
electromagnet Volt:		+	electromagnet Volt:	12
3rd speed 1/min:		+	Del. quyntity cm3/:	
Charge press. hPa:	750	+		(40.9045.30)
Subbly-brumb		+	18th speed 1/min:	600
	8.008.60	+	Shutoff	
Shutoff	4.5	+	electromagnet Volt:	12
electromagnet Volt:	12	+	Del. quantity cm3/:	26.7027.70
		+		(24.2030.20)
Overlow quantity at	overflow valve:	+	20th speed 1/min:	
		+	Charge press. hPa:	750
1st speed 1/min:	600	+	Shutoff	
Shutoff		+	electromagnet Volt:	
electromagnet Volt:	12	+	Del. quantity cm3/:	35.5038.50
	41.7083.40	+	10 <b>0</b> 0s.:	(34.0040.00)
quantity cm3/10s:		+		
2nd speed 1/min:		+	Mech. shutoff:	
Charge press. hPa:	750	+	Mech. Abstellung:	
Shutoff		+		
electromagnet Volt:		+	1st speed 1/min:	
	55.60138.90	+	Charge press. hPa:	
quantity cm3/10s:	(41.70152.90)	+	Del. quantity cm3/:	0.003.00
		+		(0.003.00)
Delivery-quant. and	breakaway char.:	+	Shutoff	
		+	electromagnet volt:	12
		+		
1nd speed 1/min:		+	Electr. shutoff:	
Charge-air pressure		+		
point hPa:		+	1st speed 1/min:	
	4.8	+	Charge press. hPa:	
Shutoff	4-	+	Del. quantity cm3/:	0.003.00
electromagnet Volt:		+	1000s.:	(0.003.00)
Del. quantity cm3/:		+	Shutoff	
	(31.0037.00)	+	electromagnet volt:	-
2nd speed 1/min:	2850	+	•	

# Idle delivery: 1st speed 1/min: 430 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.00...10.00 1000S.: (5.00...13.00) cm3/: 2.0 Dispersion 1000s.: (3.0) 2nd speed 1/min: 800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000S.: (0.00...3.00) Automatic starting fuel delivery: 1/min: 230 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.00...70.00 1000s.: (30.00...70.00) 2nd speed 1/min: 430 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 10.00...30.00 1000s.: (10.00...30.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...70.00 1000s.: (40.00...70.00) Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation mm: 3.2...3.4 K KF mm: 6.3...6.6 MS mm: 1.6...2.0 LDA stroke mm: 4.0 Remarks: : ARF = VOLVO

BUSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test scheet : VWW : 10.93 Edition replaces : 06.92 Calibrating oil : ISO-4113 Injection pump : VE6/10F2400L116-8 Type number : 0 460 406 077 Customer Part-No. : Customer-specific information Customer Engine : 072.4 (2.41.) Vol TEST BENCH REQUIREMENTS Overflow restricti: 1 463 456 303 Calibrating-oil return temp. with thermometer : 40.00...48.00 Electronically: 42.00...50.00 Inlet press., bar: 0.30...0.40 Calibrating nozzle-holder : 1 688 901 000 assembly Opening | bar: 147.00...150.00 Pressure Test inj. tubing : 1 680 750 017 Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840 Injection-pump setting values Test specifications in parentheses Timing-device travel 1/min: 1500 Speed Charge press. hPa: 750 mm: 1.50...1.90 Setting value Shutoff

Shutoff electromagnet Volt: 12 Full-load del. with charge press.: Speed 1/min: 1500 Charge press. hPa: 750 Del. quantity cm3/ 1000s.: 42.60...43.60 Shutoff electromagnet Volt: 12 Dispersion cm3/: 2.5 1000s.: (3.0) Full-load del. w/out charge press.: Speed 1/min: 600 Del. quantity cm3/ 1000s.: 26.70...27.70 Shutoff electromagnet Volt: 12 Low-idle speed regulation Speed 1/min: 430 Del. quantity cm3/ 1000s.: 8.00...10.00 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.0 1000s.: (3.0) Full-load speed regulation 1/min: 2675 Speed Charge press hPa: 750 Del. quantity cm3/ 1000s.: 11.00...15.00 Shutoff electromagnet Volt: 12 Start: 1/min: 100 Del. quantity cm3/: 40.00...70.00 mind 1000s : 40.00 Shutoff electromagnet Volt: 12 Inspection pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2400 Charge press hPa: 750 TD travel mm: 3.70...4.50 mm: (3.40...4.80) Shutoff

electromagnet Volt: 12

Speed

electromagnet Volt: 12

Charge press hPa: 750

1/min: 1500

Setting value bar: 5.70...6.30

Supply-pump pressure

3rd speed 1/min: Charge press hPa:	750	‡	Charge press. hPa: Shutoff	750
	1.501.90 (1.002.40)	+	electromagnet Volt: Del. quantity cm3/:	0.003.00
Shutoff	10	†		(0.003.00)
electromagnet Volt: 4th speed 1/min:		†	5th speed 1/min:	
Charge press hPa:		I	Charge press. hPa: Shutoff	730
	0.301.10	1		10
	(0.001.40)	T	electromagnet Volt: Del. quantity cm3/:	16 11 00 15 60
Shutoff	(0.00,1.40)	T		(9.0017.00)
electromagnet Volt:	10	T	8th speed 1/min:	
etectionagnet vott.	12	T	Charge press. hPa:	
Supply-pump pressure	e characteristic:	Ī	Shutoff electromagnet Volt:	
1st speed 1/min:	600	1	Del. quantity cm3/:	
Charge press. hPa:		I		(17.0029.00)
Supply-pump	130	Ι	9th speed 1/min:	
	3.303.90	Ι	Charge press. hPa:	
Shutoff	3.303.70	1	Shutoff	טל ז
electromagnet Volt:	12	Ι	electromagnet Volt:	12
2nd speed 1/min:		Ι	Del. quantity cm3/:	
Charge press. hPa:		Ι		(35.1039.50)
Supply-pump	7 00	T	12th speed 1/min:	
	5.706.30	T		
Shutoff	5.700.30	T	Charge press. hPa: Shutoff	700
electromagnet Volt:	12	T		12
3rd speed 1/min:	2/00	T	electromagnet Volt:	
Charge press. hPa:		T	Del. quyntity cm3/:	(40.9045.30)
Supply-pump	7 30	T	18th speed 1/min:	
	8.008.60	T	Shutoff	000
Shutoff	0.006.00	Ť		<b>4</b> 2
electromagnet Volt:	10	T	electromagnet Volt:	
etectrollagnet vott.	12	T	Del. quantity cm3/:	
Overlow quantity at	overflow values	T		(24.2030.20)
over tow qualitity at	over tow valve:	T	20th speed 1/min:	
1st speed 1/min:	£M	T	Charge press. hPa: Shutoff	730
Shutoff	800	T		10
electromagnet Volt:	12	T	electromagnet Volt: Del. quantity cm3/:	75 EN 70 EN
	41.7083.40	T	1000c	(34.0040.00)
quantity cm3/10s:		T	10005.:	(34.0040.00)
2nd speed 1/min:		T	Mech. shutoff:	
Charge press. hPa:		Ī	Mech. Abstellung:	
Shutoff	7 30	Ι	Heth. Mostertung.	
electromagnet Volt:	12	I	1st speed 1/min:	2/.00
	55.60138.90	I	Charge press. hPa:	
quantity cm3/10s:		Ι	Del. quantity cm3/:	
quare (c) ciiis/ (05)	(41.16,)2.,/0/	1	1000	(0.003.00)
Delivery-quant. and	hreakaway chan ·	I	Shutoff	(0.005.00)
beerrery quarter and	Diedraway char	I	electromagnet volt:	12
		1	etectionagnet vott.	, ¿
1nd speed 1/min:	<b>%</b> ∩0+	1	Electr. shutoff:	
Charge-air pressure-		1	Lietti. Shatoii.	
point hPa:		1	1st speed 1/min:	415
LDA-stroke mm:		1	Charge press. hPa:	च।√ 
Shutoff	,	1	Del. quantity cm3/:	
electromagnet Volt:	12	1	1000	(0.003.00)
Del. quantity cm3/:	33.5034.50	1	Shutoff	.0.005.00/
	(31.0037.00)	1	electromagnet volt:	-
2nd speed 1/min:		1	ceces omagnet votes	
		1		

## Idle delivery: 1st speed 1/min: 430 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.00...10.00 1000s.: (5.00...13.00) cm3/: 2.0 Dispersion 1000s.: (3.0) 1/min: 800 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1/min: 230 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.00...70.00 1000s.: (30,00...70.00) 2nd speed 1/min: 430 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 10.00...30.00 1000s.: (10.00...30.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...70.00 1000s.: (40.00...70.00) Shutoff electromagnet: Cut-in : 10.0 min voltage : 12.0 Rated voltage Mounting and assembly dimensions: Designation mm: 3.2...3.4 K KF mm: 6.3...6.6 MS mm: 1.6...2.0 LDA stroke mm: 4.0 Remarks: : ARF = VOLVO

Note inst. in remarks column

Test scheet : FIA 3,6 C Edition : 10.93 replaces : 02.91 Calibrating oil : ISO-4113

Injection pump : VE4/11F1250L164-2 Type number : 0 460 414 024

Customer Part-No. :

Customer-specific information Customer : IVECO-FIAT

Engine : 8045.06.220

TEST BENCH REQUIREMENTS

Calibrating—oil return temp. °C

with thermometer : 40.00...48.00 Electronically : 42,00...50,00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 020

Opening

Pressure bar: 172.00...175.00

Perforated plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0,2

(from BDC): +-0.02(0.04)

Indicator setting

Piston stroke mm: 1.0 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 800

Setting value mm: 3.00...3.40

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 800

Setting value bar: 4.10...4.70

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750

Del. quantity cm3/

1000s.: 62.00...63.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 4.0 1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 350

Del. quantity cm3/

1000s.: 21.00...25.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.5 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1350

Del. quantity cm3/

1000s.: 43.00...47.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 90.00...140.00

mind 1000s.: 90.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250

TD travel mm: 5.40...6.20 mm: (5.10...6.50)

Shutoff

electromagnet Volt: 12 3rd speed 1/min: 800

TD travel mm: 3.00...3.40

mm: (2.50...3.90)

Shutoff		+	Shutoff	
electromagnet Volt:		+	electromagnet Volt:	12
4th speed 1/min:		+	Del. quantity cm3/:	43.0047.00
	1.202.00	+		(39.0051.00)
	(0.902.30)	+	9th speed 1/min:	1250
Shutoff	4.0	+	Shutoff	
electromagnet Volt:		+	electromagnet Volt:	
5th speed 1/min:		†	Del. quantity cm3/:	
	4.805.60	+		(50.0057.00)
	(4.505.90)	+	Shutoff	••
Shutoff	13	†	electromagnet Volt:	12
electromagnet Volt:	12	†	12th speed 1/min:	750
Simplification and account	. shawaataniati.	†	Shutoff	40
Supply-pump pressure	e characteristic:	Ť	electromagnet Volt:	
1st speed 1/min:	400	T	Del. quyntity cm3/:	02.0003.00
•	000	Ť		(59.5065.50)
Supply-pump pressure bar:	3.203.80	T	20th speed 1/min: Shutoff	טטכ
Shutoff	3.203.00	T		10
electromagnet Volt:	12	T	electromagnet Volt:	12 57 00 41 00
Shutoff	12	Ţ.	Del. quantity cm3/:	(55.5062.50)
electromagnet Volt:	12	I	10003.:	(33,30,02,30)
3rd speed 1/min:	ล้กัก	I	Mech. shutoff:	
Supply-pump		Ι	Mech. Abstellung:	
	4.104.70	1	neem. Abstettung.	
Shutoff		1	1st speed 1/min:	1250
electromagnet Volt:	12	1	Del. quantity cm3/:	
4th speed 1/min:		1		(0.003.00)
Supply-pump		_	Shutoff	(0.005.00)
	6.106.70	1	electromagnet volt:	12
Shutoff		1	occeromagnee voce.	16
electromagnet Volt:	12	+	Electr. shutoff:	
· ·		+		
Overlow quantity at	overflow valve:	+	1st speed 1/min:	350
		+	Del. quantity cm3/:	
1st speed 1/min:	500	+		(0.003.00)
Shutoff		+	Shutoff	
electromagnet Volt:	12	+	electromagnet volt:	
Overflow :	41.7083.40	+	-	
quantity cm3/10s:	(26.7098.40)	+	Idle delivery:	
2nd speed 1/min:	1250	+		
Shutoff		†	1st speed 1/min:	350
electromagnet Volt:		t	Shutoff	
	55.60139.00	†	electromagnet Volt:	12
quantity cm3/10s:	(40.00,153.00)	†	Del. quantity cm3/:	
Dolings and	banales es aban e	†		(19.0027.00)
Delivery-quant. and	preakaway chan.:	†	Dispersion cm3/:	5.5 77.5)
	•	†	7mal amount 1/min	
2nd speed 1/min:	1/50	Ť	3rd speed 1/min:	400
Shutoff	1470	T	Shutoff	10
electromagnet Volt:	12	I	electromagnet Volt: Del. quantity cm3/:	
Del. quantity cm3/:	ก็กก ร.กก .	Ι		(0.003.00)
10005	(0.003.00)	1	10003.;	(0.005.00)
3rd speed 1/min:		1	Automatic starting f	uel delivery.
Shutoff		1	harmatic starting to	det detivery.
electromagnet Volt:	12	1	1st speed 1/min:	150
Del. quantity cm3/:		1	Shutoff	
1000s.:	(5.0021.00)	1	electromagnet Volt:	12
5th speed 1/min:		1		
•		4		

Del. quantity cm3/: 100.00...150.00 1000s.: (100.00...150.00)

1/min: 250 2nd speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 30.00...50.00 1000s.: (30.00...50.00)

1/min: 100 4th speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 90.00...140.00 1000s.: (90.00...140.00)

#### Shutoff electromagnet:

Cut-in

min voltage : 10,0 Rated voltage : 12,0

#### Mounting and assembly dimensions:

Designation

K mm: -

mm: 5,0...5,4 KF mm: 1,4...1,8 mm: 4,3 MS

SVS max.

Remarks:

Note inst. in remarks column

Test scheet : VOL

Edition : 05.10.93

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/11F1900L111-1

Type number : 0 460 414 025

Customer Part-No. :

Customer-specific information Customer : VOLVO-PENTA

Engine

: TAMD 30A

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening |

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1500 Speed

Setting value mm: 2.60...3.00

Supply-pump pressure

1/min: 1500 Speed Setting value bar: 6.2...6.8 Full-load del. with charge press.:

1/min: 1000

Del. quantity cm3/

1**000**\$.: 71.50...72.50

Dispersion cm3/: 3.5

1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 325

Del. quantity cm3/

1000s.: 26.00...30.00

Del. quantity cm3/: 3.0 1000s.: (4.0)

Full-load speed regulation

Speed 1/min: 2000

Del. quantity cm3/

1000s.: 42.00...48.00

Start:

Speed 1/min: 100

Del. quantity cm3/: -1000s.: 80.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000

TD travel mm: 0.50...1.30

mm: (0.20...1.60)

1/min: 1500 2nd speed

TD travel mm: 2.60...3.00

mm: (2.10...3.50)

3rd speed 1/min: 1850

TD travel mm: 3.60...4.40

mm: (3.30...4.70)

Supply-pump pressure characteristic:

1/min: 600 1st speed

Supply-pump

bar: 3.20...3.80 pressure

2nd speed 1/min: 1500

Supply-pump

pressure bar: 6.20...6.80

1/min: 1850 3rd speed

Supply-pump

bar: 7.20...7.80 pressure

Overlow quantity at overflow valve:

1st speed 1/min: 500

: 41.70...83.40 Overflow cm3/10s: (26.70...98.40) quantity

2nd speed 1/min: 1900 : 55.60...139.00 Overflow Designation quantity cm3/10s: (40.60...154.00) K mm: -KF mm: 5.6...6.0 Delivery-quant. and breakaway char.: mm: 1.2...1.4 MS SVS max. mm: 4.7 mm: 41.3...43.3 Ya 1nd speed 1/min: 2200 Yb mm: 47.5...53.5 Del. quantity cm3/: ... 7.00 1000s.: -Remarks: 2nd speed 1/min: 2100 • Del. quantity cm3/: 19.0...27.0 1000s.: (18.5...27.5) 3rd speed 1/min: 2000 Del. quantity cm3/: 42.0...48.0 1000s.: (40.5...49.5) 4th speed 1/min: 1850 Del. quantity cm3/: 68.5....71.5 1000s.: (67.3...72.7)
5th speed 1/min: 1000
Del. quantity cm3/: 71.50...72.50 1000s.: (69.30...74.70) 6th speed 1/min: 600 Del. quantity cm3/: 64.5...68.5 1000s.: (63.1...69.9) Mech. shutoff: Idle delivery: 1st speed 1/min: 325 Del. quantity cm3/: 26.00...30.00 1000s.: (23.50...32.50) cm3/: 3.0 Dispersion 1000s.: (4.0) 2nd speed 1/min: 450 Del. quantity cm3/: ... 7.0 1000s.: -Automatic starting fuel delivery: 1st speed 1/min: 350 Del. quantity cm3/: 70.0 ... 1000s.: -2nd speed 1/min: 450 Del. quantity cm3/: ... 70.0 1000s.: -3rd speed 1/min: 100 Del. quantity cm3/: 80.0 ... 1000s.: -Shutoff electromagnet: Cur-in min voltage : 20.0 Rated voltage : 24.0

Mounting and assembly dimensions:

Note inst. in remarks column

Test scheet : PER
Edition : 10.93
replaces : 06.92
Calibrating oil : ISO-4113

Injection pump : VE4/11F1500R266 Type number : 0 460 414 041

Customer Part-No. :

Customer-specific information Customer : PERKINS

Engine : 500 HYDROVAN

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating—oil return temp. °C with thermometer : 40...48

Electronically : 42...50

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening |

Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery

Prestroke mm: 0.5

(from BDC): +-0.02(0.04)

Indicator setting

Piston stroke mm: 1.42 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100

Setting value mm: 2.40...2.80

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100

Setting value bar: 4.90...5.50

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1200

Del. quantity cm3/

1000s.: 51.00...52.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.5 1000s.: (3.5)

Low-idle speed regulation

Speed 1/min: 350

Del. quantity cm3/

1000s.; 11.00...15.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 1600

Del. quantity cm3/

1000s.: 12.00...18.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 70.00...100.00

mind 1000s.: 70.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

2nd speed 1/min: 1500

TD travel mm: 3.70...4.50 mm: (3.40...4.80)

Shutoff

TD travel mm: 2.40...2.80

mm: (1.90...3.30)

Shutoff -	Pel. quantity cm3/: 12.0018.00
electromagnet Volt: 12	1000\$.: (10.0020.00)
4th speed 1/min: 700 -	9th speed 1/min: 1500
TD travel mm: 0.401.20 -	- Shutoff
mm: (0.101.50)	electromagnet Volt: 12
Shutoff -	Del. quantity cm3/: 49.0052.00
electromagnet Volt: 12	1000\$.: (47.5053.50)
5th speed 1/min: 1350 -	10th speed 1/min: 800
TD travel mm: 3.404.20	- Shutoff
mm: (3.104.50)	electromagnet Volt: 12
Shutoff	Del. quantity cm3/: 34.5037.50
electromagnet Volt: 12	1000s.: (34.5037.50)
Supply-pump pressure characteristic:	- 12th speed 1/min: 600 - Shutoff
•	electromagnet Volt: 12
1st speed 1/min: 700	Del. quyntity cm3/: 24.0027.00
Supply-pump -	10008.: (22.5028.50)
pressure bar: 3.504.10	
Shutoff -	Mech. shutoff:
electromagnet Volt: 12	
2nd speed 1/min: 1100	Electr. shutoff:
Supply-pump	
pressure bar: 4.905.50	1st speed 1/min: 350
Shutoff -	Del. quantity cm3/: 0.003.00
electromagnet Volt: 12	1000s.: (0.003.00)
3rd speed 1/min: 1500	Shutoff
Supply-pump	electromagnet volt: -
pressure bar: 6.407.00	- Coot and gree vote,
Shutoff	Idle delivery:
electromagnet Volt: 12	2010 0001101).
	1st speed 1/min: 350
Overlow quantity at overflow valve:	- Shutoff
and the same of the same same same same same same same sam	electromagnet Volt: 12
1st speed 1/min: 600	Del. quantity cm3/: 11.0015.00
Shutoff	1000s.: (9.0017.00)
electromagnet Volt: 12	Dispersion cm3/: 3.0
Overflow : 41.7083.40	1000s.: (3.0)
quantity cm3/10s: (26.7098.40)	2nd speed 1/min: 400
2nd speed 1/min: 1500	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	Pel. quantity cm3/: 2.509.50
Overflow : 55.60139.00	10005.: (1.0011.00)
quantity cm3/10s: (40.60153.00)	3rd speed 1/min: 460
404.00.1199.007	- Shutoff
Delivery-quant. and breakaway char.:	electromagnet Volt: 12
delivery quarter and of calculary chairs.	Pol. quantity cm3/: 0.005.00
	1000s.: (9.005.00)
1nd speed 1/min: 1200	[ [0003 \lambda].00J.007
Shutoff	- Automatic starting fuel delivery:
electromagnet Volt: 12	L Addonate Starting ruet delivery.
Del. quantity cm3/: 51.0052.00	1st speed 1/min: 300
1000s.: (49.0054.00)	- Shutoff
3rd speed 1/min: 1650	electromagnet Volt: 12
Shutoff	Del. quantity cm3/: 36.0052.00
electromagnet Volt: 12	1000s.: (36.0052.00)
Dec. quantity cm3/: 0.003.00	L (00.00,72.00)
1000\$.: (0.003.00)	2nd speed 1/min: 400
5th speed 1/min: 1600	- Shutoff
Shutoff	. 1 1 1
electromagnet Volt: 12	- electromagnet Volt: 12
THE TOTAL POLL. IL	Γ

Del. quantity cm3/: 27.50...42.50 1000s.: (27.50...42.50)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 70.00...100.00 1000S.: (70.00...100.00)

#### Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

### Mounting and assembly dimensions:

#### Designation

K mm: -KF mm: K-OT mm: 1.2..1.45 MS SVS max. mm: 3.8 mm: 28.5...30.5 Ya

Remarks:

Yb

: "HIGH IDLE RESET" : = PERKINS-TYPSCHILD

mm: 59.7...70.1

Note inst. in remarks column

Test scheet : PER Edition : 10.93 replaces : 03.93 Calibrating oil : ISO-4113

Injection pump : VE4/11F1500R266-1 Type number : 0 460 414 042

Customer Part-No. :

Customer-specific information Customer : PERKINS

Engine : MARINE NA 3000

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40...48 Electronically : 42...50

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening .

Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery

Prestroke mm: 0.5

(from BDC): +-0.02(0.04)

Indicator setting Piston stroke mm: 1.42

Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1100 Speed

Setting value mm: 2.40...2.80

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1100 Speed

Setting value bar: 4.90...5.50

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1200

Del. quantity cm3/

1000s.: 48.50...49.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.5 1000s.: (3.5)

Low-idle speed regulation

Speed 1/min: 350

Del. quantity cm3/ 1000s.: 11.00...15.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 1600

Del. quantity cm3/

1000s.: 12.00...18.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 70.00...100.00

1000s.: 70.00 mind

Shutoff

electromagnet Volt: 12

Inspection-pump, test\_specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1500

mm: 3.70...4.50 TD travel mm: (3.40...4.80)

Shutoff

electromagnet Volt: 12 3rd speed

1/min: 1100 mm: 2.40...2.80 TD travel

mm: (1.90...3.30)

Shutoff	+	Del. quantity cm3/:	12.0018.00
electromagnet Volt: 12	+	10 <b>00</b> S.:	(10.0020.00)
4th speed 1/min: 700		9th speed 1/min:	1500
	01.20	Shutoff	
	101.50)	electromagnet Volt:	
Shutoff	†	Del. quantity cm3/:	46.0050.00
electromagnet Volt: 12	, †		(45.5051.50)
5th speed 1/min: 1350		10th speed 1/min:	800
TD travel mm: 3.40	04.20	Shutoff	45
Shutoff	104.50)	electromagnet Volt:	77 00 7/ 00
	Ť	Del. quantity cm3/:	33.0036.00
electromagnet Volt: 12	†	12+6 50004 1/	(33.0036.00)
Supply-pump pressure cha	aractoristis:	12th speed 1/min:	000
supply bails hi essure the	aracteristic.	Shutoff	10
1st speed 1/min: 700	I	<pre>electromagnet Volt: Del. quyntity cm3/:</pre>	
Supply-pump	· I		(20.5026.50)
pressure bar: 3.50	n 410 I	10003	(20.)020.)0
Shutoff	Ι	Mech. shutoff:	
electromagnet Volt: 12	$\mathbf{I}$	recti. Shutoi i.	
2nd speed 1/min: 1100	n	Electr. shutoff:	
Supply-pump	1	etecti. Silutori.	
pressure bar: 4.90	15.50	1st speed 1/min:	350
Shutoff	1	Del. quantity cm3/:	
electromagnet Volt: 12	1		(0.003.00)
3rd speed 1/min: 1500	)	Shutoff	(0.005.00)
Supply-pump	<u> </u>	electromagnet volt:	-
pressure bar: 6.40	J7.00 ↓		
Shutoff	4	Idle delivery:	
electromagnet Volt: 12	+		
•	+	1st speed 1/min:	350
Overlow quantity at over	rflow valve:	Shutoff	
	+	electromagnet Volt:	12
1st speed 1/min: 600	+	Del. quantity cm3/:	11.0015.00
Shutoff	+		(9.0017.00)
electromagnet Valt: 12		Dispersion cm3/:	
	7083.40	1000s.:	
quantity cm3/10s: (26.		2nd speed 1/min:	400
2nd speed 1/min: 1500	J +	Shutoff	
Shutoff	†	electromagnet Volt:	12
electromagnet Volt: 12	(0. 470.00	Del. quantity cm3/:	2.509.50
	60139.00		(1.0011.00)
quantity cm3/10s: (40.	.60153.00)	3rd speed 1/min:	460
Nothing a sent and bank	town about	Shutoff	42
Delivery-quant, and brea	akaway char.:	electromagnet Volt:	
	Ť	Del. quantity cm3/:	(0.005.00
1nd speed 1/min: 1200	, T	10005.:	(0.005.00)
Shutoff	<sup>7</sup>	Automotic etantina	Sund what do now in
electromagnet Volt: 12	Ť	Automatic starting 1	ruet detivery:
Del. quantity cm3/: 48.5	sa ko sa I	1st speed 1/min:	<b>ኛ</b> በበ
1000s.: (46.		Shutoff	300
3rd speed 1/min: 1650		electromagnet Volt:	12
Shutoff	Ī	Del. quantity cm3/:	
electromagnet Volt: 12	1		(36.0052.00)
Dec. quantity cm3/: 0.00	33.00	10003	~~~.W.,./£,00/
10008.: (0.0	003.00)	2nd speed 1/min:	400
5th speed 1/min: 1600		Shutoff	
Shutoff	1	electromagnet Volt:	12
electromagnet Volt: 12	1	- 1001. Smagnet FOLLI	• ••
	1		

Del. quantity cm3/: 24.50...39.50 1000s.: (24.50...39.50)

1/min: 100 4th speed

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 70.00...100.00 1000S.: (70.00...100.00)

#### Shutoff electromagnet:

Cut-in

min voltage : 10.0 : 12.0 Rated voltage

## Mounting and assembly dimensions:

Designation

mm: -KF mm: K-OT mm: 1.2..1.45 MS SVS max. mm: 3.8 mm: 28.5...30.5 Ya

Yb mm: 59.7...70.1

:

Remarks:

D21

BOSCH-INJ. -PUMP TEST SPECIFICATIONS Note inst. in remarks column Test scheet : SOF Edition : 10.93 replaces : 12.91 Calibrating oil : ISO-4113 Injection pump : VE4/11F1900R294 Type number : 0 460 414 054 Customer Part-No. : Customer-specific information Customer : SOFIM Engine : 8140.27.200 TEST BENCH REQUIREMENTS Calibrating-oil return temb. with thermometer : 40.00...48.00 Electronically : 42.00...50.00 Inlet press., bar : 0.30...0.40 Calibrating nozzle-holder assembly : 1 688 901 027 Opening | Pressure bar: 250.00...253.00 Perforated plate diameter mm: 0.5 Test inj. tubing : 1 680 750 073 Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450 Start of delivery Prestroke mn: -(from BDC): -Injection-pump setting values Test specifications in parentheses Timing-device travel

Supply-pump pressure 1/min: 1100 Speed Charge press hPa: 1000 Setting value bar: 5.80...6.40 Shutoff electromagnet Volt: 12 Full-load del. with charge press.: 1/min: 1800 Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 54.50...55.50 Shutoff electromagnet Volt: 12 Dispersion cm3/: 4.0 1000s.: (4.5) Full-load del. w/out charge press.: Speed 1/min: 650 Del. quantity cm3/ 1000s.: 29.50...30.50 Shutoff electromagnet Volt: 12 Low-idle speed regulation 1/min: 375 Del. quantity cm3/ 1000s.: 13.00...17.00 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 6.0 1000s.: (6.5) Full-load speed regulation Speed 1/min: 2200 Charge press hPa: 1000 Del. quantity cm3/ 1000s.: 20.50...26.50 Shutoff electromagnet Volt: 12 Start: Speed 1/min: 100 Del. quantity cm3/: 40.00...80.00 1000s.: 40.00 Shutoff electromagnet Volt: 12 Load-dependent start of delivery: Inj.-qty.dif.measurement: 1/min: 1100 Speed Charge press hPa: 1000

Shutoff

Speed 1/min: 1100 Charge press. hPa: 1000

electromagnet Volt: 12

Setting value mm: 1.10...1.50

Inj.—qty. cm3/	05.0 77.00	+	Charge press. hPa:	
difference 1000S.: Shutoff	25.033.00	<b>†</b>	Shutoff electromagnet Volt:	10
electromagnet Volt:		Ŧ		41.7083.40
TD-travel dif.measu	rement	+	quantity cm3/10s:	(26.7098.40)
correttore anticipo	iniezione (SV)	1	2nd speed 1/min:	
1. Speed 1/min:		1	Charge press. hPa:	
TD-travel	1100	Ţ		1000
	0.40 0.40	T	Shutoff	40
	0.400.60	†	electromagnet Volt:	15
Shutoff		+	Overflow :	
electromagnet Volt:	12	+	quantity cm3/10s:	(40.60154.00)
Inspection-pump tes	t specifications	Į	Delivery-quant. and	breakaway char.
Test specifications	in parentheses	1	• •	•
.,	,	1		
Timing-device chara	cteristic.	1	1nd speed 1/min:	8007
Thirting device chara	cter iscia.	T		
2.4.	4750	†	Charge-air pressure	
2nd speed 1/min:		+	point hPa:	450
Charge press hPa:	1000	-	LDA-stroke nm:	6,5
TD travel mm:	5.005.80	+	Shutoff	•
	(4.706.10)	1	electromagnet Volt:	12
Shutoff	(4.700.10)	T		
•	8.5	<b>T</b>	Del. quantity cm3/:	30.3037.30
electromagnet Volt:		+		(33.0041.00)
3rd speed 1/min:		+	2nd speed 1/min:	2350
Charge press hPa:	1000	+	Charge press. hPa:	1000
TD travel mm:	1.101.50	1	Shutoff	
	(0.602.00)	1		10
	(0.002.00)	T	electromagnet Volt:	16
Shutoff	4-	+	Del. quantity_cm3/:	0.005.00
electromagnet Volt:		+	1000s.:	-
6th speed 1/min:	1500	. <b>ļ</b> _	5th speed 1/min:	2290
Charge press. hPa:	1000	1	Charge press. hPa:	
	3.604.40	1	Shutoff	7000
	(3.304.70)	T		45
	(3.304.70)	<b>T</b>	electromagnet Volt:	
Shutoff	• •	†	Del. quantity_cm3/:	20.5026.50
electromagnet Volt:	12	+	1000s.÷	(19.0028.00)
		<b>→</b>	8th speed 1/min:	2100
Supply-pump pressure	e characteristic:	1	Charge press. hPa:	
colotesty bout to condi			Shutoff	1000
1st speed 1/min.	450	T		40
1st speed 1/min:		†	electromagnet Volt:	
	1000	· <del>†</del>	Del. quantity cm3/:	40.5048.50
Supply-pump		+	1000s.:	(38.5050.50)
pressure bar:	4.104.70	+	9th speed 1/min:	
Shutoff		$\perp$	Charge press. hPa:	
electromagnet Volt:	10	1		1000
		T	Shutoff	40
2nd speed 1/min:		†	electromagnet Volt:	
Charge press. hPa:	1009	+	Del. quantity cm3/:	50.0056.00
Supply-pump		+	1000s.:	(49.5056.50)
	5.806.40	1	11th speed 1/min:	
Shutoff	2.0011.0.40	T	Change proces block	1000
	40	T	Charge press. hPa:	1000
electromagnet Volt:		†	Shutoff	
3rd speed 1/min:		+	electromagnet Volt:	12
Charge press. hPa:	1000	+	Del. quantity cm3/:	52.5057.50
Supply-pump		1		(51.0059.00)
	7.708.30	1		
		T	12th speed 1/min:	
Shutoff	40	†	Charge press. hPa:	IUUU
electromagnet Volt:	72	t	Shutoff	
		+	electromagnet Volt:	12
Overlow quantity at	overflow valve:	+	Del. quyntity cm3/:	54,50,55,50
, , , ,	. • • •	1	10000	(51.5058.50)
1st speed 1/min:	650	Ţ	15th speed 1/min:	
				1.51.8.7

Charge press. hPa: 1000	∔ Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	+
Del. quantity cm3/: 51.5056.50 1000s.: (50.0058.00)	TD-travel dif.measurement: correttore anticipo iniezione (SV):
18th speed 1/min: 650	1st speed 1/min: 1100
Charge press. hPa: -	+ Charge press. hPa: 1000
Shutoff	+ TD-travel : 0.401.20 量
electromagnet Volt: 12 Del. quantity cm3/: 29.5020.50	+ difference mm: -
1000s.: (26.5033.50)	electromagnet Volt: 12
20th speed 1/min: 650	+
Charge press. hPa: 1000 Shutoff	SP press.—dif.measurement:
electromagnet Volt: 12	pompa di mandata (FP): 1st speed 1/min: 1100
Del. quantity cm3/: 50.5059.50	Charge press. hPa: 1000
1000s.: (49.5060.50)	- Supply pump-
Mech. shutoff:	+ pressure : 0.100.30 # + difference bar: -
regn. endlor.	T difference par: -
Electr. shutoff:	Automatic starting fuel delivery:
1st speed 1/min: 375	- 1st speed 1/min: 350
Del. quantity cm3/: 0.003.00	+ Shutoff
Shutoff electromagnet volt: -	<pre>+ electromagnet Volt: 12 + Del. quantity cm3/: 42.0078.00</pre>
occording to voce.	1000S.: -
Idle delivery:	+
1 m mand 1 min 275	† 2nd speed 1/min: 450
1st speed 1/min: 375 Shutoff	+ Shutoff + electromagnet Volt: 12
electromagnet Volt: 12	Del. quantity cm3/: 12.0048.00
Del. quantity cm3/: 13.0017.00	+ 1000s.: -
1000S.: (11.0019.00) Dispersion cm3/: 6.0	/ / / / / / / / / / / / / / / / / / /
Dispersion cm3/: 6.0 1000S.: (6.5)	+ 4th speed 1/min: 100 + Shutoff
2nd speed 1/min: 450	+ electromagnet Volt: 12
Shutoff	+ Del. quantity cm3/: 40.0080.00
electromagnet Volt: 12 Del. quantity cm3/: 0.005.00	† 1000s.: -
1000s.: -	T Shutoff electromagnet:
3rd speed 1/min: 325	+
Shutoff electromagnet Volt: 12	+ Cut-in
Del. quantity cm3/: 39.0049.00	+ min voltage : 10.0 + Rated voltage : 12.0
10005.: (38.0050.00)	thated vottage . 12.0
	+ Mounting and assembly dimensions:
Load-dependent start of delivery: Injqty.dif.measurement:	+ Designation
ity. qcy. art. incasar enerte.	+ K mm: 3.23.4
1st speed	+ KF mm: K-OT
Charge press. hPa: 1000	† MS mm: 0.61.0
Injqty. cm3/ : 24.526.5 # difference 1000s.: -	+ SVS max. mm: 2.5 + LDA stroke mm: 6.5
KSB/AFB	+ XK mm: 21.823.8
valve Volt: 12	+ XL mm: 12.315.7
4th speed	+ Remarks:
Inj.—qty. cm3/: 2.008.00	T MCHIGINS.
difference 1000s.: -	+

Operate control lever after each manifold-pressure compensator pressure change. \* Correction at adjusting nut Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES! Information additionally required for testing fuel-injection pump: TEST PREREQUISITES Calibrating oil return temperature with thermometer, °C Calibrating oil inlet temperature, °C :35...40 Dwell speed, 1/min :1100 Feedback voltage, mV SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates Test speed, 1/min :<500 Temperature stabilisation speed 1/min :2200 Output temperature, °C :51 Measurement temperature, °C:49 Test speed, 1/min :500...799 Temperature stabilisation speed 1/min :2200 Output temperature, °C :48 Measurement temperature, °C:46 Test speed, 1/min :800...1199 Temperature stabilisation :2200/100 speed 1/min Output temperature, °C :45 Measurement temperature, °C:45 :1200...1700 Test speed, 1/min Temperature stabilisation speed 1/min :100 Output temperature, °C :42 Measurement temperature, °C:44 Test speed, 1/min : 1700 Temperature stabilisation speed 1/min :100

Output temperature, °C

Measurement temperature, °C:43

:41

Note inst. in remarks column

Test scheet : SOF : 10.93 Edition replaces : 10.91 Calibrating oil : ISO-4113

: VE4/11F1900R294-2 Injection pump Type number : 0 460 414 081

Customer Part-No. :

Customer-specific information : SOFIM Customer

: 8140.27.2510/210 Engine

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250.00...253.00 Pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1100 Speed Charge press. hPa: 1000

Setting value mm: 1.10...1.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1100 Speed Charge press hPa: 1000

Setting value bar: 5.80...6.40

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1100 Speed Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 49.00...50.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 4.0 1000s.: (4.5)

Full-load del. w/out charge press.:

1/min: 650 Speed

Del. quantity cm3/

1000s.: 29.50...30.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 375 Speed

Del. quantity cm3/

1000s.: 13.00...17.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 6.0 1000s.: (6.5)

Full-load speed regulation

1/min: 2200 Charge press hPa: 1000

Del. quantity cm3/

1000s.: 19.00...25.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 40.00...80.00

1000s.: 40.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1100 Charge press hPa: 1000

Injqty. cm3/ difference 1000S.: Shutoff	-25.0033.00	-	1st speed 1/min: Charge press. hPa: Shutoff	
electromagnet Volt:	12	L	electromagnet Volt:	12
TD-travel dif.measu			Overflow :	
correttore anticipo		Γ	quantity cm3/10s:	
1. Speed 1/min:			2nd speed 1/min:	
Charge press hPa:		Γ	Charge press. hPa:	
TD-travel	1000	Γ		TUUU
difference mm:	-0 /0 · 0 /0		Shutoff	43
	70.4070.00	<b>T</b>	electromagnet Volt:	
Shutoff	40	<b>†</b>		55.60139.00
electromagnet Volt:	12		quantity cm3/10s:	(40.60153.00)
Inspection-pump test	t specifications	-	Delivery-quant. and	breakaway char.
Test specifications		L	, q.,	ar containay official
	-	-		
Timing-device charac	cteristic:	-	1nd speed 1/min:	*00 <b>*</b>
-		-	Charge-air pressure	
2nd speed 1/min:	1750	-	point hPa:	
Charge press hPa:		_		2.8
	5.005.80	L	Shutoff	2.0
	(4.706.10)	L	electromagnet Volt:	12
Shutoff			Del. quantity cm3/:	
electromagnet Volt:	12	Γ	1000 ·	(38.8046.80)
3rd speed 1/min:	4100	Γ	2md period 1/min.	130.0040.00/
			2nd speed 1/min:	
		-	Charge press. hPa:	1000
	1.101.50	<b>T</b>	Shutoff	4.5
	(0.602.00)	Ι .	electromagnet Volt:	
Shutoff	40	-	Del. quantity cm3/:	
electromagnet Volt:		-		(0.005.00)
6th speed 1/min:		-	5th speed 1/min:	
Charge press. hPa:	1000	-	Charge press. hPa:	1000
TD travel mm:	3.604.40	-	Shutoff	
nm:	(3.304.70)	-	electromagnet Volt:	12
Shutoff	-	_	Del. quantity cm3/:	
electromagnet Volt:	12	_	1000s.:	(17.5026.50)
3 - 1		-	8th speed 1/min:	
Supply-pump pressure	characteristic:	L	Charge press. hPa:	
omprey hand by cook,			Shutoff	1000
1st speed 1/min:	650	Ĺ	electromagnet Volt:	12
Charge press. hPa:	1000		Del quantity cm3/:	30 nn /7 nn
Supply-pump	1000		Del. quantity cm3/:	77.0047.00 777.00 (0.00)
	4.505.10	-		(37.0049.00)
pressure bar: Shutoff	4.505.10		9th speed 1/min:	
	10		Charge press. hPa:	1000
electromagnet Volt:		-	Shutoff	42
2nd speed 1/min:		-	electromagnet Volt:	
Charge press. hPa:	1000	-	Del. quantity cm3/:	
Supply-pump		-		(46.5053.50)
	5.806.40	-	10th speed 1/min:	1750
Shutoff	-	<u>_</u>	Charge press. hPa:	1000
electromagnet Volt:		_	Shutoff	
3rd speed 1/min:	1750	_	electromagnet Volt:	12
Charge press. hPa:	1000	_	Del. quantity cm3/:	
Supply-pump		-	1000s.:	(47.5054.50)
pressure bar:	7.708.30	-	11th speed 1/min:	
Shutoff		_	Charge press. hPa:	
electromagnet Volt:	12		Shutoff	
		_	electromagnet Volt:	12
Overlow quantity at	overflow valve:	_	Del. quantity cm3/:	
The con yourself he	J. J. Con Valve.			40.7073.70 747 50 54 50\

12th speed 1/min: 1100 Charge press. hPa: 1000 Shutoff	†	Injqty. cm3/: difference 1000s.: KSB/AFB	24.5026.50 (24.5026.50)
electromagnet Volt: 12	1	valve Volt:	1
Del. quyntity cm3/: 49.0050.00	1	Shutoff	
10008.: (46.0053.00)	7		10
18th speed 1/min: 650	T	electromagnet Volt:	12
	1	Shutoff	4.0
Charge press. hPa: -	†	electromagnet Volt:	
Shutoff	+	5th speed 1/min:	
electromagnet Volt: 12	+	Charge press. hPa:	
Del. quantity cm3/: 29.5030.50	+	Injqty. cm3/:	2.008.00 Z
1 <b>000</b> S.: (26.5033.50)	+	difference 1000s.:	(2.008.00) Z
20th speed 1/min: 650	+	KSB/AFB	
Charge press. hPa: 1000	+	valve Volt:	#
Shutoff	1	Shutoff	•
electromagnet Volt: 12	1	electromagnet Volt:	12
Del. quantity cm3/: 46.0055.00	1	ctetti onagnet vott.	12
10008.: (45.0056.00)	T	Thetanial difference	
10003.: (43.00)0.007	Ť	TD-travel dif.measu	
Mach about off.	Ť	correttore anticipo	
Mech. shutoff:	†	1st speed 1/min:	
m1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+	Charge press. hPa:	1000
Electr. shutoff:	+	TD-travel :	-0.400.60
	+		(-0.400.60)
1st speed 1/min: 375	+	KSB/AFB	
Charge press. hPa: ~	+	valve Volt:	*
Del. quantity cm3/: 0.003.00	+	Shutoff	
10008.: (0.003.00)	1	electromagnet Volt:	12
Shutoff	1	4th speed 1/min:	
electromagnet volt: -	1		1000
over an any recovery	1		-0.401.20
Idle delivery:	1	difference mm:	(-0.401.20)
idea de civery.	T	KSB/AFB	(-0.401.20)
1st speed 1/min: 375	T		ш
Shutoff	<b>T</b>		#
	†	Shutoff	40
electromagnet Volt: 12	†	electromagnet Volt:	12
Del. quantity cm3/: 13.0017.00	†		
1000s.: (11.0019.00)	+	SP press.—dif.measur	
Dispersion cm3/: 6.0	+	pompa di mandata (Ff	
1000S.: (6.5)	+	1st speed 1/min:	
2nd speed 1/min: 450	+	Charge press. hPa:	1000
Shutoff	+	Supply pump-	
electromagnet Volt: 12	+		-0.100.30
Del. quantity cm3/: 0.005.00	1		(-0.100.30)
1000s.: (0.005.00)	4	KSB/AFB	
5th speed 1/min: 325	1	valve Volt:	1
Del. quantity cm3/: 37.0047.00	1	Shutoff	
1000\$.: (36.0048.00)	1	electromagnet Volt:	12
1000011 (50,00111, 40.007	1	ecce. anagher vote.	16
Load-dependent start of delivery:	1	Automatic starting 1	Fuel delivery:
Inj.—qty.dif.measurement:	Τ	Automatic Starting	det detivery.
inja quytari incasar eneric.	T	1st speed 1/min.	750
1st speed 1/min: 1100	T	1st speed 1/min: Shutoff	טרכ
	T		10
Charge press. hPa: 1000	<b>†</b>	electromagnet Volt:	
Injqty. cm3/ : -25.033.0	†	Del. quantity cm3/:	
difference 1000s.: (-25.033.0)	†	1000s.:	(42.0078.00)
KSB/AFB	+		
valve Volt: *	+	2nd speed 1/min:	450
2nd speed 1/min: 1100	+	Shutoff	
Charge press. hPa: 1000	+	electromagnet Volt:	12

Del. quantity cm3/: 12.00...48.00 1000s.: (12.09...48.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...80.00 1000s.: (40.00...80.00) Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation mm: 3.2...3.4 K KF mm: KOT MS mm: 0.6...1.0 mm: 2.5 SVS max. LDA stroke mm: 2.8 mm: 20.0...22.0 XK XL mm: 12.6...16.0 mm: 36.9...40.9 Ya mm: 42.8...48.2 Yb Operate control lever after each manifold-pressure compensator pressure change. \* Correction at adjusting nut Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES! Information additionally required for testing fuel-injection pump: TEST PREREQUISITES Calibrating-oil return temperature with thermometer, °C :45 Calibrating-oil inlet temperature, °C :35...40 Dwell speed, 1/min :1100 Feedback voltage, mV SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates :<500 Test speed, 1/min

speed 1/min :2200 Output temperature, °C :51 Measurement temperature, °C:49 :500...799 Test speed, 1/min Temperature stabilisation speed 1/min :2200 Output temperature, °C :48 Measurement temperature, °C:46 Test speed, 1/min :800...1199 Temperature stabilisation speed 1/min :2200/100 Output temperature, °C :45 Measurement temperature, °C:45 Test speed, 1/min :1200...1700 Temperature stabilisation speed 1/min :100 Output temperature, °C :42 Measurement temperature, °C:44 Test speed, 1/min : 1700 Temperature stabilisation speed 1/min :100 Output temperature, °C :41 Measurement temperature, °C:43

Temperature stabilisation

Note inst. in remarks column

Test scheet : SOF

Edition : 02.08.93

replaces

Calibrating oil : ISO-4113

: VE4/11F1900R522 Injection pump Type number : D 460 414 103

Customer Part-No. :

Customer-specific information Customer : IVECO-SOFIM

: 8140.27.3700 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil °C return temp.

with thermometer : 44.00...46.00

Electronically

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina

bar: 250.00...253.00 Pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400

Charge press. hPa: 1200 Setting value mm: 2.90...3.10

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1400 Speed

Charge press hPa: 1200

Setting value bar: 6.60...7.20

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1750 Speed Charge press. hPa: 1200

Del. quantity cm3/

1000s.: 50.50...51.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 4.0

1000s.: (4.5)

Full-load del. w/out charge press.:

1/min: 550 Speed

Del. quantity cm3/

1000s.: 27.00...28.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 300 Speed

Del. quantity cm3/

1000s.: 8.00...12.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 6.0 1000s : (6.5)

Full-load speed regulation

1/min: 2100 Speed Charge press hPa: 1200

Del. quantity cm3/ 10005:: 33.00...37.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100

Del. quantity cm3/: 40.00...90.00

1000s.: 40.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1400 Speed 3rd speed 1/min: 1900 Charge press hPa: 1200 Charge press. hPa: 1200 Supply-pump Inj.-qty. cm3/difference 1000s.: -19.00..21.00 # bar: 8.70...9.30 pressure Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 SP press.-dif.measurement pompa di mandata (FP) Overlow quantity at overflow valve: 1.Speed 1/min: 1400 Charge press Supply pump nPa: 1200 1st speed 1/min: 800 Charge press. hPa: 1200 Shutoff pressure difference bar: - 0.10..0.30# electromagnet Volt: 12 : 75.00...119.50 Shutoff Overflow electromagnet Volt: 12 cm3/10s: (60.00...134.50) quantity 2nd speed 1/min: 1900 Inspection pump test specifications Charge press. hPa: 1200 Test specifications in parentheses Shutoff electromagnet Volt: 12
Overflow : 97.30...180.70 Timing-device characteristic: quantity cm3/10s: (82.30...195.70) 1/min: 1900 2nd speed Charge press hPa: 1200 Delivery-quant, and breakaway char.: mm: 5.30...5.90 TD travel mm: (4.90...6.30) Shutoff 1nd speed 1/min: 800 electromagnet Volt: 12 3rd speed 1/min: 1750 Charge press hPa: 1200 Charge-air pressure-setting hPa: 600 LDA-stroke mm: 6.2 mm: 5.30...5.90 TD travel Shutoff mm: (4.90.,.6.30) electromagnet Volt: 12 Del. quantity cm3/: 45.50...46.50 1000s.: (42.00...50.00) 2nd speed 1/min: 2300 Shutoff. electromagnet Volt: 12 4th speed 1/min: 1400 Charge press hPa: 1200 TD travel mm: 2.90...3.10 mm: (2.30...3.70) Charge press. hPa: 1200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 3rd speed 1/min: 2100 Shutoff electromagnet Volt: 12 5th speed 1/min: 1250 Charge press. hPa: 1200 TD travel mm: 1.60...2.20 Charge press. hPa: 1200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 33.00...37.00 1000s.: (30.50...39.50) mm: (1.20...2.60) Shutoff electromagnet Volt: 12 1/min: 2000 5th speed Charge press. hPa: 1200 Shutoff Supply-pump pressure characteristic: 1st speed 1/min: 800 electromagnet Volt: 12 Del. quantity cm3/: 43.00...51.00 Charge press. hPa: 1200 1000s.: (41.00...53.00) Supply-pump bar: 3.80...4.40 pressure 9th speed 1/min: 1900 Shutoff Charge press. hPa: 1200 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1400 Charge press. hPa: 1200 electromagnet Volt: 12 Del. quantity cm3/: 48.50...53.50 1000s.: (47.50...54.50) Supply-pump pressure bar: 6.60...7.20 1/min: 1750 12th speed Shutoff Charge press. hPa: 1200

electromagnet Volt: 12

Shutoff +	Injqty. cm3/ : -19.025.0 "
electromagnet Volt: 12	difference 1000s.: -(18.026.0) "
Del. quyntity cm3/: 50.5051.50	Shutoff
1000s.: (47.5054.50)	electromagnet Volt: 12
13th speed 1/min: 1000 +	2nd speed 1/min: 1400
Charge press. hPa: 1200	Charge press. hPa: 1200
Shutoff +	Injqty. cm3/: 0.03.00 ' Z
electromagnet Volt: 12	difference 1000s.: -
Del. quantity cm3/: 45.0050.00	Shutoff
10003.: (43.5051.50)	electromagnet Volt: 12
14th speed 1/min: 800 +	
Charge press. hPa: -	TD-travel dif.measurement:
Shutoff	correttore anticipo iniezione (SV):
electromagnet Volt: 12	1st speed 1/min: 1400
Del. quantity cm3/: 27.5032.50	Charge press. hPa: 1200
1000s.: (26.5033.50)	TD-travel : -0.70.90 "
15th speed 1/min: 800 +	difference mm: -
Charge press. hPa: 1200	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	2nd speed 1/min: 1400
Del. quantity cm3/: 45.5054.50	Charge press. hPa: 1200
1000\$.: (44.5055.50)	TD-travel : -1.01.80 '
18th speed 1/min: 550 +	difference mm: -
Charge press. hPa: -	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	4th speed 1/min: 1400
Del. quantity cm3/: 27.0028.00	
1000s.: (23.0031.00)	Automatic starting fuel delivery:
+	
Mech. shutoff:	1st speed 1/min: 200
+	Shutoff
Electr. shutoff:	electromagnet Volt: 12
4-t	Del. quantity cm3/: 55.00105.00
1st speed 1/min: 325	1000s.: (55.00105.00)
Charge press. hPa: -	2 /
Del. quantity cm3/: 0.003.00	2nd speed 1/min: 500
10003.: (0.003.00)	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet volt: -	Del. quantity cm3/: 14.0030.00
	1000s.: (14.0030.00)
Idle delivery:	/ the surger of
1st speed 1/min. 725	4th speed 1/min: 100
1st speed 1/min: 325	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
Del. quantity cm3/: 8.0012.00	Del. quantity cm3/: 40.0090.00
10005:: (6.0014.00)	1000s.: (40.0090.00)
Dispersion cm3/: 6.0	Chutoff alastromamat.
1000s.: (6.5)	Shutoff electromagnet:
2nd speed 1/min: 425	Cuthinam
Shutoff	Cut-in min voltage : 10.0
electromagnet Volt: 12	
Del. quantity cm3/: 0.003.00	Rated voltage : 12.0
1000s.: (0.003.00)	Mounting and accomply dimensions:
Ţ	Mounting and assembly dimensions:
Load-dependent start of delivery:	Designation
Inj.—qty.dif.measurement:	K mm: K1
1	
	KF mm: -
1st speed 1/min: 1400 +	KF mm: - MS mm: -
1st speed 1/min: 1400 + Charge press. hPa: 1200 +	KF

mm: 6.2 mm: 37.9...39.9 LDA stroke Ya mm: 44.3...50.1 Yb Remarks: Z = Absolute delivery Ya = Distance between VE flange and speed-control lever in idle position Measurement point = edge of control lever on drive end Yb = Distance between VE flange and speed-control lever in rated speed position Measurement point = edge of control lever on distributor-head end Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES! Information additionally required for testing fuel-injection pump: TEST PREREQUISITES Calibrating-oil return temperature with thermometer, °C Calibrating oil inlet :35...40 temperature, °C Dwell speed, 1/min :1100 Feedback voltage, mV SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates Test speed, 1/min :<500 Temperature stabilisation speed 1/min :2100 Output temperature, °C :51 Measurement temperature, °C:49 Test speed, 1/min :500...799 Temperature stabilisation

:2100

:800...1199

:48

speed 1/min :2100/100 Output temperature, °C :45 Measurement temperature, °C:45 Test speed, 1/min :1200...1700 Temperature stabilisation speed 1/min :100 Output temperature, °C :42 Measurement temperature, °C:44 Test speed, 1/min : 1700 Temperature stabilisation speed 1/min :100 Output temperature, °C :41 Measurement temperature, °C:43

speed 1/min

Output temperature, °C

Temperature stabilisation

Test speed, 1/min

Measurement temperature, °C:46

Note inst. in remarks column

Test scheet

: SOF

Edition

: 02.08.93

replaces

Calibrating oil

: ISO-4113

Injection pump

: VE4/11F1900R535

Type number

: 0 460 414 104

Customer Part-No. :

Customer

Customer-specific information

: IVECO-SOFIM

Engine

: 8140.47.2210

Power

KW: -

Speed

1/min: 83

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil

return temp.

with thermometer : 44.00...46.00

Electronically

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly

: 1 688 901 027

Openina

Pressure bar: 250.00...253.00

Perforated plate

diameter

mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00

mm: 450

x Length

Start of delivery

Prestroke

mm: -

(from BDC): -

Injection pump setting values

Test specifications in parentheses

Timing-device travel

Speed

1/min: 1400

Charge press. hPa: 1000

Setting value mm: 2.40...2.60

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed

1/min: 1400

Charge press hPa: 1000

Setting value bar: 6.40...7.00

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1750

Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 60.50...61.50

Shutoff

electromagnet Volt: 12

Dispersion cm3/: 4.0

1000S.: (4.5)

Full-load del. w/out charge press.:

Speed

1/min: 550

Del. quantity cm3/

1000s.: 23.00...24.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed

1/min: 325

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 6.0

1000s.: (6.5)

Full-load speed regulation

Speed

1/min: 2175

Charge press hPa: 1000

Del. quantity cm3/

19**0**0s.: 25.00...31.00

Shutoff

electromagnet Volt: 12

Start:

Speed

1/min: 100

Del. quantity cm3/: 40.00...90.00

1000s.: 40.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

E06

<pre>Injqty.dif.measurement:</pre>	+	Shutoff	
	+	electromagnet Volt:	
Speed 1/min: 1400	+	3rd speed 1/min:	
Charge press hPa: -	+	Charge press. hPa:	1000
Injqty. cm3/	+	Supply-pump	
difference 1000s.: -15.51	7.5 #	pressure bar:	8.108.70
Shutoff	+	Shutoff	
electromagnet Volt: 12	1	electromagnet Volt:	12
SP press.—dif.measurement	1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	· <del>-</del>
pompa di mandata (FP)	1	Overlow quantity at	overflow valve.
1. Speed 1/min: 1400	1	oron con quanterey ac	over reow vacve.
Charge press hPa: -	1	1st speed 1/min:	ደበበ
Supply pump	1	Charge press. hPa:	
pressure	1	Shutoff	1000
difference bar: - 0.10	13#	_	12
Shutoff		electromagnet Volt: Overflow :	
	• 1		75.00119.50
electromagnet Volt: 12	<b>T</b>	quantity cm3/10s:	
Topographics with the transfer		2nd speed 1/min:	
Inspection pump test specific	ations +	Charge press. hPa:	1000
Test specifications in parent	neses +	Shutoff	<b>.</b>
	†	electromagnet Volt:	12
Timing device characteristic:	+	Overflow :	97.30180.70
	+	quantity cm3/10s:	(82.30195.70)
2nd speed 1/min: 1600	+		
Charge press hPa: 1000	+	Delivery-quant. and	breakaway char.:
TD travel mm: 3.504.	10 +	• •	
mm: (3.104	.50) +		
Shutoff	1	1nd speed 1/min:	800
electromagnet Volt: 12	1	Charge-air pressure-	
3rd speed 1/min: 1400	1	point hPa:	
Charge press hPa: 1000	. ↓	Shutoff	100
TD travel mm: 2.402.	60 1	electromagnet Volt:	12
mm: (1.803		Del. quantity cm3/:	12 18 50 10 50
Shutoff	, 20)		
electromagnet Volt: 12	Ī		(45.0053.00)
	T	2nd speed 1/min:	
	†	Charge press. hPa:	1000
Charge press hPa: 1000	·	Shutoff	40
TD travel mm: 1.201.		electromagnet Volt:	12
mm: (0.802	·20) +	Del. quantity_cm3/:	0.003.00
Shutoff	+	1000s.:	(0.003.00)
electromagnet Volt: 12	+	3rd speed 1/min:	
5th speed 1/min: 1900	+	Charge press. hPa:	1000
Charge press. hPa: 1000	+	Shutoff	
TD travel mm: 4.605.	20 +	electromagnet Volt:	12
mm: (4.205	.60) +	Del. quantity cm3/:	
Shutoff	4-		(23.5032.50)
electromagnet Volt: 12	1	Shutoff	(201) 0111021907
	1	electromagnet Volt:	12
Supply-pump pressure characte	ristic.	5th speed 1/min:	
and the product of the dece	1.736.6.	Charge press. hPa:	
1st speed 1/min: 800	1	Shutoff	1000
Charge press. hPa: 1000	Ι		12
Supply-pump	1	electromagnet Volt:	
pressure bar: 4.204.	en T	Del. quantity cm3/:	
Shutoff bar: 4.204.	₩ †		(36.0048.00)
	†	9th speed 1/min:	
electromagnet Volt: 12	†	Charge press. hPa:	1000
2nd speed 1/min: 1400	†	Shutoff	4.6
Charge press. hPa: 1000	+	electromagnet Volt:	12
Supply-pump	+	Del. quantity cm3/:	58.5063.50
pressure har: 6.407 i	[K]	1000 •	$(57.50 \pm 6/.50)$

12th speed 1/min: 1750 +	Charge press. hPa: -
Charge press. hPa: 1000	Injqty. cm3/: 2.008.00 'Z
Shutoff	difference 1000s.: -
electromagnet Volt: 12	Shutoff
Del. quyntity cm3/: 60.5061.50	electromagnet Volt: 12
1000s.: (57.5064.50)	
15th speed 1/min: 1250 +	TD-travel dif.measurement:
Charge press. hPa: 1000	correttore anticipo iniezione (SV):
Shutoff	1st speed 1/min: 1400
electromagnet Volt: 12	Charge press. hPa: -
Del. quantity cm3/: 55.5060.50	
10008.: (54.0062.00)	TD-travel : -0.80.9 " difference mm: -
16th speed 1/min: 800	Shutoff
Charge press. hPa: 1000	electromagnet Volt: 12
Shutoff	2nd speed 1/min: 1400
electromagnet volt: 12	
Del. quantity cm3/: 54.0063.00	Charge press. hPa: +
1000H.: (53.0064.00)	TD-travel : - 1.01.8 '
18th speed 1/min: 550	difference mm: -
	Shutoff
Charge press. hPa: -	electromagnet Volt: 12
Shutoff + 12	
electromagnet Volt: 12	Part-load del.at 3rd injqty.
Del. quantity cm3/: 23.0024.00	terza fermo della portata
1000s.: (20.0027.00)	stop (EGR set)
+	scarico) (ARF)
Mech. shutoff:	gaz d'échappement-ARF)
+	Spacing mm: 12.0
Electr. shutoff: +	
<del> </del>	1st speed 1/min: 1200
1st speed 1/min: 325	Charge press. hPa: -
Del. quantity cm3/: 0.003.00	Shutoff
1000s.: (0.003.00)	electromagnet Volt: 12
Shutoff	Del. quantity cm3/: 17.0019.00
electromagnet volt: -	1000s.: (15.5020.50)
<u> </u>	
Idle delivery:	Automatic starting fuel delivery:
<u> </u>	<u> </u>
1st speed 1/min: 325 1	1st speed 1/min: 200
Shutoff	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
Del. quantity cm3/: 10.0014.00	Del. quantity cm3/: 55.00105.00
1000s.: (8.0016.00)	100Cs.: (55.00105.00)
Dispersion cm3/: 6.0	10000: (33:00:::103:00)
10008.: (6.5)	2nd speed 1/min: 500
2nd speed 1/min: 450	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	Del. quantity cm3/: 14.0030.00
Del. quantity cm3/: 0.003.00	10005.: (14.0030.00)
10008: (0,003.00)	10003.1 (14.0050.00)
I I I I I I I I I I I I I I I I I I I	4th speed 1/min: 100
Load-dependent start of delivery:	Shutoff
Injqty.dif.measurement:	
and deposit measurement.	electromagnet Volt: 12
1st speed 1/min: 1400 ‡	
	Del. quantity cm3/: 40.0090.00
Tharge proce hPa:	
Charge press. hPa: -	Del. quantity cm3/: 40.0090.00 1000S.: (40.0090.00)
Injqty. cm3/ : -16.022.0 "	Del. quantity cm3/: 40.0090.00
Injqty. cm3/ : -16.022.0 " difference 1000s.: -	Del. quantity cm3/: 40.0090.00 1000s.: (40.0090.00) Shutoff electromagnet:
Injqty. cm3/ : -16.022.0 " difference 1000s.: -	Del. quantity cm3/: 40.0090.00 1000s.: (40.0090.00) Shutoff electromagnet:
Injqty. cm3/ : -16.022.0 " difference 1000s.: -	Del. quantity cm3/: 40.0090.00 1000s.: (40.0090.00) Shutoff electromagnet:

Mounting and assembly dimensions:

Designation

K mm: K1 KF mm: K-OT MS1 mm: 1.4...1.6 Ya mm: 33.0...35.0 Yb mm: 46.4...52.4

Remarks:

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position Measurement point = edge of control lever on distributor-head end

### Z = Absolute delivery

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES
Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100 Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500
Temperature stabilisation speed 1/min :2100
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation speed 1/min :2100/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test scheet : VOL : 10.93 Edition : 06.92 replaces Calibrating oil : ISO-4113 Injection pump : VE6/11F1900L218-8 : 0 460 416 065 Type number Customer Part-No. : Customer-specific information Customer : PENTA Engine : TAMD 41 B Power KW: 132 TEST BENCH REQUIREMENTS Overflow restricti: 1 463 456 303 Calibrating-oil return temp. with thermometer: 40...48 Electronically : 42...50 Inlet press., bar: 0.30...0.40 Calibrating nozzle-holder assembly : 1 688 901 022 Opening bar: 130.00...133.00 Pressure Test inj. tubing : 1 680 750 073 Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length Start of delivery Prestroke mm: 0.3 (from BDC): +-0.02(0.04)Injection pump setting values Test specifications in parentheses Timing-device travel

Speed 1/min: 1200 Charge press. hPa: 1000 Setting value mm: 3.30...3.70 Supply-pump pressure E10

Speed 1/min: 1200 Charge press hPa: 1000 Setting value bar: 5.90...6.50 Full-load del. with charge press.: Speed 1/min: 1500 Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 98.00...99.00 cm3/: 5.0 Dispersion 1000s.: (5.0) Full-load del. w/out charge press.: Speed 1/min: 650 Del. quantity cm3/ 1000s.: 64.50...65.50 Low-idle speed regulation Speed 1/min: 325 Del. quantity cm3/ 1000s.: 25.00...29.00 Del. quantity cm3/: 3.5 1000s.: (3.5) Full-load speed regulation Speed 1/min: 2050 Charge press hPa: 1000 Del. quantity cm3/ 1000s.: 37.00...41.00 Start: Speed 1/min: 100 Del. quantity cm3/: 80.00...120.00 1000s.: 80.00 Inspection pump test specifications Test specifications in parentheses Timing device characteristic: 3rd speed 1/min: 1200 hPa: 1000 Charge press TD travel rm: 3.30...3.70 mm: (2.80...4.20) 4th speed 1/min: 800 Charge press hPa: 1000 TD travel mm: 1.00...2.00 mm: (0.80...2.20) 1/min: 1900 5th speed Charge press. hPa: 1000 mm: 4.00...4.80 TD travel mm: (3.70...5.10) 7.Rotacao 1/min: 1000

Charge press. hPa: 1000

Del. quantity cm3/: 67.50...70.50 1000s.: (67.50...70.50) 15th speed 1/min: 1200 mm: 2.30...3.10 mm: (2.00...3.40) TD travel Charge press. hPa: 1000 Del. quantity cm3/: 98.50...102.50 1000s.: (97.00...104.00) Supply-pump pressure characteristic: 1st speed 1/min: 1900 Charge press. hPa: 1000 1/min: 650 18th speed Supply-pump pressure bar: 7.40...8.00 2nd speed 1/min: 1200 Charge press. hPa: 1000 1/min: 800 20th speed Charge press. hPa: 1000 Del. quantity cm3/: 87.00...93.00 1000S.: (86.00...94.00) Supply-pump bar: 5.90...6.50 pressure 3rd speed 1/min: 800 Charge press. hPa: 1000 Supply-pump Mech. shutoff: pressure bar: 5.00...5.60 Mech. Abstellung: Overlow quantity at overflow valve: 1/min: 1900 1st speed Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 1/min: 650 1st speed Overflow : 41.70...83.40 cm3/10s: (26.70...98.40) 1/min: 1900 quantity 2nd speed Electr. shutoff: Charge press. hPa: 1000 Overflow : 55.60...139.00 1st speed 1/min: 325 cm3/10s: (40.60...153.00) quantity Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Delivery-quant. and breakaway char .: Shutoff electromagnet volt: 12 1nd speed 1/min: 800 Idle delivery: Charge-air pressure-setting hPa: 200 1st speed 1/min: 325
Del. quantity cm3/: 25.00...29.00
10905.: (22.00...32.00) point LDA-stroke mm: 4.5
Del- quantity cm3/: 77.00...78.00
1000S.: (70.50...84.50)
2nd speed 1/min: 2200
Charge press. hPa: 1000 cm3/: 5.0 Dispersion 1000s.: (5.0) 1/min: 480 2nd speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 3rd speed 1/min: 400 Del. quantity cm3/: 5.00...11.00 1000s.: (3.50...12.50) Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 3rd speed 1/min: 2100 Charge press. hPa: 1000
Del. quantity cm3/: 5.00...25.00
1000S.: (5.00...25.00)
5th speed 1/min: 2050 Automatic starting fuel delivery: Charge press. hPa: 1000 Det. quantity cm3/: 37.00...41.00 1st speed 1/min: 300 Del. quantity cm3/: 70.00...100.00 1000s.: (70.00...100.00) 1000S.: (33.00...45.00)
9th speed 1/min: 1900
Charge press. hPa: 1000
Del. quantity cm3/: 88.00...92.00
1000S.: (86.00...94.00) 2nd speed 1/min: 500 Del. quantity cm3/: 50.00...70.00 1/min: 1500 12th speed 1000s.: (50.00...70.00) Charge press. hPa: 1000
De. quyntity cm3/: 98.00...99.00
1000S.: (96.20...100.80)
14th speed 1/min: 800 4th speed 1/min: 100 Del. quantity cm3/: 80.00...120.00 1000s.: (80.00...120.00) Charge press. hPa: -Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

# Mounting and assembly dimensions:

Designation

K mm: KF mm: K-OT
MS mm: 0.6...1.0
LDA stroke mm: 4.5
XK mm: 21.8...23.8
XL mm: 11.2...14.6
Ya mm: 37.2...39.2
Yb mm: 53.1...60.9

#### Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut

Overflow restriction 0.55 mm - Part No. ..303

Ya = Distance between VE flange and speed-control lever in idle position Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position Measurement point = edge of control lever on distributor-head end

Note inst. in remarks column

: MAN Test scheet

Edition : 20.09.93

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/11F1350R562 Type number : 0 460 416 076

Customer Part-No. :

Customer-specific information

Customer : MAN

Engine : D 0826 OH 03

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 109 assembly

Opening

bar: 207.00...210.00 Pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00

x Length

mm: 840

Start of delivery

Prestroke mm: 0.55

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000

Setting value mm: 1.30...1.70

Supply-pump pressure

1/min: 1000 Speed Setting value bar: 6.2...6.8

Full-load del. w/out charge press.:

Speed 1/min: 1000

Del. quantity cm3/

1000s.: 78.50...79.50

Dispersion cm3/: 4.0

1000s.: (4.5)

Low-idle speed regulation

Speed 1/min: 300

Del. quantity cm3/ 1000s.: 7.00...13.00

Del. quantity cm3/: 6.0

1000s.: (6.5)

Full-load speed regulation

1/min: 1420 Speed

Del. quantity cm3/

1000s.: 57.90...63.00

Start:

Speed 1/min: 100

Del. quantity cm3/: 56.0...58.0

1000s.: mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 900 1st speed

TD travel mm: 0.40...1.20

mm: (0.10...1.50)

2nd speed 1/min: 1000

mm: 1.30...1.70 TD travel mm: (0.80...2.20)

1/min: 1350 3rd speed

TD travel mm: 3.60...4.40

70m: -

Supply-pump pressure characteristic:

1/min: 600 1st speed

Supply-pump

bar: 4,40...5.00 pressure

2nd speed 1/min: 1000

Supply-pump

bar: 6.20...6.80 pressure

3rd speed 1/min: 1350

Supply-pump

bar: 7.80...8.40 pressure

Overlow quantity at overflow valve:

2nd speed 1/min: 500 Del. quantity cm3/: 45.0...65.0 1st speed 1/min: 600 : 41.70...83.40 Overflow 1000s.: cm3/10s: (26.70...98.40) quantity 2nd speed 1/min: 1350 4th speed 1/min: 100 Del. quantity cm3/: 56.0...58.0 : 55.60...139.00 cm3/10s: (40.60...154.00) Overflow quantity 1000s.: -Delivery-quant. and breakaway char.: Shutoff electromagnet: Cut-in 2nd speed 1/min: 1550 min voltage Del. quantity cm3/: 0.00...3.00 Rated voltage : -1000s.: -3rd speed 1/min: 1500 Mounting and assembly dimensions: Del. quantity cm3/: ... 15.0 1000s.: -Designation 1/min: 1450 4th speed mm: -Del. quantity cm3/: 15.00...55.00 KF mm: 5.0...5.4 1000s.: -MS mm: -5th speed 1/min: 1420
Del. quantity cm3/: 57.00...63.00
1000s.: (53.50...66.50)
6th speed 1/min: 1350 mm: 37.4...40.4 Ya mm: 42.8...48.2 Remarks: Del. quantity cm3/: 73.50...76.50 1000s.: (72.00...78.00) 7th speed 1/min: 1000 Del. quantity cm3/: 78.50...79.50 1000s.: (76.50...81.50) Ya = Distance between VE flange and speed-control lever in idle 1/min: 850 8th speed Measurement point = edge of control Del. quantity cm3/: 76.00...80.00 lever on drive end 1000s.: (74.50...81.50) 1/min: 600 9th speed Del. quantity cm3/: 52.10...59.10 1000s.: (51.10...60.10) Yb = Distance between VE flange and speed-control lever in rated speed Mech. shutoff: Measurement point = edge of control Mech. Abstellung: lever on distributor-head end 1000s.: -Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 7.00...13.00 1000S.: (4.50...15.50) Dispersion cm3/: 6.0 1000s.: (6.5) 1/min: 450 2nd speed Del. quantity cm3/: 0.00...3.00 1000s.: -Automatic starting fuel delivery: 1st speed 1/min: 350 Del. quantity cm3/: 55.0...75.00

1000s.: -

Note inst. in remarks column

Test scheet : MAN

Edition : 20.09.93

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/12F1300R436

Type number : 0 460 426 188

Customer Part-No.:

Customer-specific information

Customer

: MAN

Engine

: D 0826 TOH

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil

return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 110

Opening |

Pressure bar: 250.00...253.00

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00

x Wall thickness : 2.00 mm: 840

x Length

Start of delivery

Prestroke mm: 0.2

 $(from BDC): \leftarrow 0.02(0.04)$ 

Injection-pump setting values

Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000

Charge press. hPa: 1000 Setting value mm: 2.80...3.20 Supply-pump pressure

Speed 1/min: 1000 Charge press hPa: 1000

Setting value bar: 8.1...8.7

Full-load del. with charge press.:

1/min: 1000 Speed

Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 84.50...85.50 Dispersion cm3/: 3.5

1000s.: (4.5)

Full-load del. w/out charge press.:

1/min: 600 Speed

Del. quantity cm3/

1000s.: 57.50...58.50

Low-idle speed regulation

Speed 1/min: 300

Del. quantity cm3/ 1000s.: 7.00...13.00

Del. quantity cm3/: 6.0

1000s.: (6.5)

Full-load speed regulation

Speed 1/min: 1400

Charge press hPa: 1000

Del. quantity cm3/ 1000s.: 70.00...76.00

Start:

Speed 1/min: 100

Del. quantity cm3/: -

1000s.: 50.00

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1000 Speed

hPa: 1000 Charge press

Inj.-qty. cm3/

difference 1000s.: -12.5...14.50 #

SP press.-dif.measurement pompa di mandata (FP) 1.Speed 1/min: 1000 Charge press hPa: 1000

Supply pump

pressure

difference bar: - 0.1..0.30 #

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:	pel. quantity cm3/: 15.0055.00
1st speed 1/min: 900	1000s.: - + 5th speed 1/min: 1400
Charge press hPa: 1000	
Th Americal 1 50 0 70	+ Charge press. hPa: 1000
TD travel mm: 1.502.30	+ Del. quantity cm3/: 70.0076.00
mm: (1.202.60)	1000s.: (68.5077.50)
2nd speed 1/min: 1000	+ 6th speed 1/min: 1300
Charge press hPa: 1000	Charge press. hPa: 1000
TD travel mm: 2.803.20	Del. quantity cm3/: 80.5083.50
mm: (2.303.70)	40000 470 00 04 00
	+ 1000s.: (78.0086.00)
3rd speed 1/min: 1100	† 7th speed 1/min: 1000
Charge press hPa: 1000	+ Charge press. hPa: 1000
TD travel mm: 3.504.30	+ Del. quantity cm3/: 84.5085.50
mm: (3.204.60)	1000s.: (82.5087.50)
	+ 8th speed 1/min: 800
Complex norms appropriate about the second	
Supply-pump pressure characteristic:	+ Charge press. hPa: 1000
	+ Del. quantity cm3/: 85.0089.00
1st speed 1/min: 600	+ 1000s.: (83.0091.00)
Charge press. hPa: 1000	+ 9th speed 1/min: 600
Supply-pump	Charge press. hPa: 1000
pressure bar: 5.806.40	Pol grantity and 60 00 0/ 00
	+ Del. quantity cm3/: 90.0094.00
2nd speed 1/min: 1000	+ 1000s.: (86.0098.00)
Charge press. hPa: 1000	+ 10th speed 1/min: 600
Supply-pump	+ Charge press. hPa: -
pressure bar: 8.108.70 3rd speed 1/min: 1100	+ Del. quantity cm3/: 57.5058.50
3rd enged 1/min: 1100	1000s.: (55.5060.50)
Change appear to 1000	7 10003.: (33.3000.30)
Charge press. hPa: 1000	†
Supply-pump	† Mech. shutoff:
pressure bar: 8.709.30	+ Mech. Abstellung:
	+
Overlow quantity at overflow valve:	1st speed 1/min: 1300
	+ Charge press. hPa: 1000
1st speed 1/min: 600	
	+ Del. quantity cm3/: 0.003.00
Charge press. hPa: -	† 1000s.: -
Overflow : 41.7083.40	+ Shutoff
quantity cm3/10s: (26.7098.40)	+ electromagnet volt: -
2nd speed 1/min: 1300	
Charge press. hPa: 1000	Idle delivery:
Overflow : 55.60139.00	Tute detivery.
- 7/10- (/0 /0 45/ 00)	T 4
quantity cm3/10s: (40.60154.00)	+ 1st speed 1/min: 300
	+ Del. quantity cm3/: 7.0013.00
Delivery quant. and breakaway char.:	+ 1000s.: (4.5015.50)
	+ Dispersion cm3/: 6.0
	10005.: (6.5)
1nd speed 1/min: 600	
	+ 2nd speed 1/min: 400
Charge-air pressure-setting	+ Del. quantity_cm3/: 0.003.00
point hPa: 300	+ 1000s.: ~
LDA-stroke mm: 7.3	1
Del. quantity cm3/: 72.0073.00	Load-dependent start of delivery:
10008.: (70.0075.00)	In acts dif managements
	+ Injqty.dif.measurement:
2nd speed 1/min: 1650	†
Charge press. hPa: 1000	+ 1st speed 1/min: 1000
Del. quantity cm3/: 0.003.00	+ Charge press. hPa: 1000
1000s.: -	+ Injqty. cm3/ : -23.531.5 "
3rd speed 1/min: 1630	+ difference 1000s.: -
Charge press. hPa: 1000	
Dol guartity and/a 45 0	2nd speed 1/min: 1000
Del. quantity cm3/: 15.0	+ Charge press. hPa: 1000
1000s.: -	+ Injqty. cm3/: "Z" 2.08.0"
4th speed 1/min: 1570	+ difference 1000s.: -
Charge press. hPa: 1000	+
one of the state	•

Note inst. in remarks column

Test scheet : VOL Edition : 10.93 : 02.93 replaces Calibrating oil : ISO-4113

Injection pump : VE6/12F1950L448 : 0 460 426 193 Type number

Customer Part-No.:

Customer-specific information Customer : PENTA

Engine : TD 42 A

KW: 170 Power

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating oil return temp.

with thermometer : 44.00...46.00

Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 901 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500 Charge press. hPa: 1500 Setting value mm: 2.80...3.20

Supply pump pressure

Speed 1/min: 1500 Charge press hPa: 1500 Setting value bar: 8.2...8.8

Full-load del. with charge press.:

1/min: 1800 Speed Charge press. hPa: 1500 Del. quantity cm3/

1000s.: 130.7...131,7

cm3/: 5.0Dispersion

Full-load dei. w/out charge press.:

1/min: 600 Speed Del. quantity cm3/

1000s.: 58,50...59.50

Low-idle speed regulation

1/min: 400 Speed Del. quantity cm3/ 1000s.: 17.00...21.00

Del. quantity cm3/: 5.0 1000s.: -

Full-load speed regulation

Speed 1/min: 2150 Charge press hPa: 800

Del. quantity cm3/

1000s.: 24.00...30.00

Start:

1/min: 100 Speed

Del. quantity cm3/: 80.00...140.00

1000s : 80.00

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1100 1st speed Charge press hPa: 1500

mm: 1.00...2.00 TD travel

mm: (0.60...2.40)

2nd speed 1/min: 1500 hPa: 1500 Charge press

mm: 2.80...3.20 TD travel

mm: (2.30...3.70)

1/min: 1900 3rd speed Charge press hPa: 1500

TD travel mm: 4.50...5.30 mm: (4.00...5.80)

Supply-pump pressure characteristic:

A	
1st speed 1/min: 600	+ Del. quantity cm3/: 135.00140.00
Charge press. hPa: 1500	+ 1000s.: (134.00141.00)
Supply-pump	+ 8th speed 1/min: 1100
pressure bar: 5.305.90	+ Charge press. hPa: 1500
2nd speed 1/min: 1100	+ Del. quantity cm3/: 84.5088.50
Charge press. hPa: 1500	+ 1000s.: (83.0090.00)
Supply-pump	+ 9th speed 1/min: 900
pressure bar: 7.007.60	
	+ Charge press. hPa: 1500
3rd speed	+ Del. quantity cm3/: 123.50128.50
Charge press. hPa: 1500	+ 1000s.: (122.50129.50)
Supply-pump	+ 10th speed 1/min: 600
pressure har 8.20 8.80	+ Charge press. hPa: 1500
pressure bar: 8.208.80 4th speed 1/min: 1900	Del guentity em7/, 147 00 424 00
Champanana har 4500	+ Del. quantity cm3/: 117.00121.00
Charge press. nPa: 1500	† 1000s.: (115.co123.00)
Supply-pump	+ 11th speed 1/min: 600
pressure bar: 9.309.90	- Charge press. hPa: -
	Del. quantity cm3/: 58.5059.50
Overlow quantity at overflow valve:	
over tow quantity at over itow valve.	† 1000s.: (57.0061.00)
And we add Alice (AD	<b>†</b>
1st speed 1/min: 600	+ Mech. shutoff:
Charge press. hPa: 1500	+ Mech. Abstellung:
0verflow : 75.00119.40	1
quantity cm3/10s: (60.00134.40)	1st speed 1/min: 1950
2nd speed 1/min: 1950	
	+ Charge press. hPa: 1500
Charge press. hPa: 1500	+ Del. quantity cm3/: 0.003.00
Overflow : 97.20180.50	1000s.: -
quantity cm3/10s: (82.20195.50)	1
described the control of the control	+ Electr. shutoff:
Dal from a post and branks are shown	T Etecti. Shutori.
Delivery-quant. and breakaway char.:	Ť
	+ 1st speed 1/min: 400
	+ Charge press. hPa: -
1nd speed 1/min: 800	+ Del. quantity cm3/: 0.003.00
Charge-air pressure-setting	10008.: -
be an pressure setting	1
point hPa: 700*	+ Shutoff
LDA-stroke mm: 7.5	+ electromagnet volt: 12.0
Del. quantity cm3/: 89.5090.50	+
1000s.: (84.0096.00)	idle delivery:
2nd speed 1/min: 2300	10th detivery.
	1-4
Charge press. hPa: 1500	+ 1st speed 1/min: 400
Del. quantity cm3/: 0.003.00	1 No. 1 de contrata de 2/2 17 NO 24 NO
10000	+ Del. quantity cm3/: 17.0021.00
1000s.: -	
	† 1000s.: (15.0023.00)
3rd speed 1/min: 2150	1000S.: (15.0023.00) Dispersion cm3/: 5.0
3rd speed 1/min: 2150 Charge press. hPa: 1500	1000s.: (15.0023.00) + Dispersion cm3/: 5.0 1000s.: -
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: -  2nd speed 1/min: 550
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00 1000s.: (21.0033.00)	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: -  2nd speed 1/min: 550
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00 1000S.: (21.0033.00) 4th speed 1/min: 2050	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s.: -
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00 1000S.: (21.0033.00) 4th speed 1/min: 2050 Charge press. hPa: 1500	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s.: -  3rd speed 1/min: 450
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00 1000S.: (21.0033.00) 4th speed 1/min: 2050 Charge press. hPa: 1500 Del. quantity cm3/: 101.00115.00	1000s:: (15.0023.00)  Dispersion cm3/: 5.0  1000s:: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s:: -  3rd speed 1/min: 450  Del. quantity cm3/: 6.0012.00
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00 1000S.: (21.0033.00) 4th speed 1/min: 2050 Charge press. hPa: 1500 Del. quantity cm3/: 101.00115.00 1000S.: (94.00122.00)	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s.: -  3rd speed 1/min: 450
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00 1000S.: (21.0033.00) 4th speed 1/min: 2050 Charge press. hPa: 1500 Del. quantity cm3/: 101.00115.00 1000S.: (94.00122.00) 5th speed 1/min: 1950	1000s:: (15.0023.00)  Dispersion cm3/: 5.0  1000s:: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s:: -  3rd speed 1/min: 450  Del. quantity cm3/: 6.0012.00
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00 1000S.: (21.0033.00) 4th speed 1/min: 2050 Charge press. hPa: 1500 Del. quantity cm3/: 101.00115.00 1000S.: (94.00122.00) 5th speed 1/min: 1950 Charge press. hPa: 1500	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s.: -  3rd speed 1/min: 450  Del. quantity cm3/: 6.0012.00  1000s.: (4.0014.00)
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00 1000S.: (21.0033.00) 4th speed 1/min: 2050 Charge press. hPa: 1500 Del. quantity cm3/: 101.00115.00 1000S.: (94.00122.00) 5th speed 1/min: 1950 Charge press. hPa: 1500	1000s:: (15.0023.00)  Dispersion cm3/: 5.0  1000s:: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s:: -  3rd speed 1/min: 450  Del. quantity cm3/: 6.0012.00
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s.: -  3rd speed 1/min: 450  Del. quantity cm3/: 6.0012.00  1000s.: (4.0014.00)  Automatic starting fuel delivery:
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s.: -  3rd speed 1/min: 450  Del. quantity cm3/: 6.0012.00  1000s.: (4.0014.00)  Automatic starting fuel delivery:  1st speed 1/min: 500
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s.: -  3rd speed 1/min: 450  Del. quantity cm3/: 6.0012.00  1000s.: (4.0014.00)  Automatic starting fuel delivery:  1st speed 1/min: 300  Del. quantity cm3/: 60.0090.00
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s.: -  3rd speed 1/min: 450  Del. quantity cm3/: 6.0012.00  1000s.: (4.0014.00)  Automatic starting fuel delivery:  1st speed 1/min: 500
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s.: -  3rd speed 1/min: 450  Del. quantity cm3/: 6.0012.00  1000s.: (4.0014.00)  Automatic starting fuel delivery:  1st speed 1/min: 300  Del. quantity cm3/: 60.0090.00
<pre>3rd speed   1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00</pre>	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s.: -  3rd speed 1/min: 450  Del. quantity cm3/: 6.0012.00  1000s.: (4.0014.00)  Automatic starting fuel delivery:  1st speed 1/min: 300  Del. quantity cm3/: 60.0090.00  1000s.: -
<pre>3rd speed   1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00</pre>	1000s: (15.0023.00)  Dispersion cm3/: 5.0  1000s: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s: -  3rd speed 1/min: 450  Del. quantity cm3/: 6.0012.00  1000s: (4.0014.00)  Automatic starting fuel delivery:  1st speed 1/min: 300  Del. quantity cm3/: 60.0090.00  1000s: -  2nd speed 1/min: 100
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: —  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s.: —  3rd speed 1/min: 450  Del. quantity cm3/: 6.0012.00  1000s.: (4.0014.00)  Automatic starting fuel delivery:  1st speed 1/min: 500  Del. quantity cm3/: 60.0090.00  1000s.: —  2nd speed 1/min: 100  Del. quantity cm3/: 80.00140.00
<pre>3rd speed   1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00</pre>	1000s: (15.0023.00)  Dispersion cm3/: 5.0  1000s: -  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s: -  3rd speed 1/min: 450  Del. quantity cm3/: 6.0012.00  1000s: (4.0014.00)  Automatic starting fuel delivery:  1st speed 1/min: 300  Del. quantity cm3/: 60.0090.00  1000s: -  2nd speed 1/min: 100
3rd speed 1/min: 2150 Charge press. hPa: 1500 Del. quantity cm3/: 24.0030.00	1000s.: (15.0023.00)  Dispersion cm3/: 5.0  1000s.: —  2nd speed 1/min: 550  Del. quantity cm3/: 0.03.0  1000s.: —  3rd speed 1/min: 450  Del. quantity cm3/: 6.0012.00  1000s.: (4.0014.00)  Automatic starting fuel delivery:  1st speed 1/min: 500  Del. quantity cm3/: 60.0090.00  1000s.: —  2nd speed 1/min: 100  Del. quantity cm3/: 80.00140.00

# Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -KF mm: K-OT MS mn: mm: 2,6 mm: 7.5 SVS max. 1\_DA stroke Ya mm: 37.2...39.2

mm: 53.4...61.4 Yb

#### Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut

Ya = Distance between VE flange and speed-control lever in idle position Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position Measurement point = edge of control lever on distributor-head end

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES Calibrating-oil return temperature with thermometer, °C

Calibrating-oil inlet :35...40 temperature, \*C

Dwell speed, 1/min :1100 Feedback voltage, mV

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500 Temperature stabilisation speed 1/min :2100 Output temperature, °C :51 Measurement temperature, °C:49

Test speed, 1/min :500...799 Temperature stabilisation speed 1/min :2100 Output temperature, °C :48 Measurement temperature, °C:46

Test speed, 1/min :800...1199 Temperature stabilisation speed 1/min :2100/100 Output temperature, °C :45 Measurement temperature, °C:45

:1200...1700 Test speed, 1/min Temperature stabilisation speed 1/min :100 Output temperature, °C :42 Measurement temperature, °C:44

Test speed, 1/min : 1700 Temperature stabilisation speed 1/min :100 Output temperature, °C :41 Measurement temperature, °C:43

Note inst. in remarks column

Test scheet : MAN

Edition : 20.09.93

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/12F1200R307-4

Type number : 0 460 426 202

Customer Part-No. :

Customer-specific information

**Customer** 

: MAN

Engine

: D 0826 LOH 02

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil

return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly

: 1 688 901 110

Opening

bar: 250,00...253.00 Pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00

x Wall thickness : 2.00

x Length

mn: 840

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

mm: 2.90...3.30

Injection pump setting values

Test specifications in parentheses

Timing-device travel

Setting value

1/min: 1000 Speed

Charge press. hPa: 1000

Supply-pump pressure

Charge press hPa: 1000 Setting value bar: 7.9...8.5

Full-load del. with charge press.:

1/min: 1000

1/min: 1000 Speed

Charge press. hPa: 1000 Charge press. ...\_ Del. quantity cm3/ 1000s.: 90.00...91.00

cm3/: 4.0 Dispersion

1000s.: (4.5)

Full-load del. w/out charge press.:

1/min: 600 Speed

Del. quantity cm3/

1000s.: 60.00...61.00

Low-idle speed regulation

Speed 1/min: 300

Del. quantity cm3/

1000s.: 6.50...13.50

Del. quantity cm3/: 6.0

10**0**0s.: (6.5)

Full-load speed regulation

1/min: 1320 Speed

Charge press hPa: 1000

Del. quantity cm3/

1000s.: 67.00...73.00

Start:

Speed 1/min: 100

Del. quantity cm3/: 60.00...100.00

1000s.: 80.00

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1000 Speed Charge press hPa: 1000

cm3/Inj.—qty.

difference 1000s.: - 7.5...9.50 #

SP press.-dif.measurement pompa di mandata (FP)

1/min: 1000 1.Speed Charge press hPa: 1000

Supply pump

pressure

bar: -0.0..0.20 #difference

Inspection-pump test specifications Test specifications in parentheses

Timing-device chara	cteristic:	Del. quantity cm3/:	
1st speed 1/min:	ann I	1000S.: 4th speed 1/min:	
Charge press hPa:			
		Charge press. hPa:	
in travet	0.301.10	Del. quantity cm3/:	
	(0.001.40)	1000s.:	
2nd speed 1/min:		5th speed 1/min:	
Charge press hPa:	1000	Charge press. hPa:	
	2.903.30	Del. quantity cm3/:	
	(2.403.80)		(65.5074.50)
3rd speed 1/min:		6th speed 1/min:	1200
Charge press hPa:	1000 +	Charge press. hPa:	1000
	3.804.60	Del. quantity cm3/:	86.0091.00
mm:	(3.504.90)		(84.5092.50)
4th speed 1/min:		7th speed 1/min:	
Charge press hPa:		Charge press. hPa:	
TD travel mm:	4.50 5.30	Del. quantity cm3/:	
mm:	<b>5</b>	10000	(88.0093.00)
*******	$\mathbf{I}$	8th speed 1/min:	
Supply-pump pressure	a characteristic:		
achter bound by cason	e characteristic.	Charge press. hPa:	
1st speed 1/min:	٠m †	Del. quantity cm3/:	
			(89.5097.50)
Charge press. hPa:	1000 +	9th speed 1/min:	
Supply-pump	<b>†</b>	Charge press. hPa:	
pressure bar: 2nd speed 1/min:	5.305.90	Del. quantity cm3/:	
2nd speed 1/min:	800 +		(92.00104.00)
Charge press. hPa:	1000 +	10th speed 1/min:	
Supply-pump	+	Charge press. hPa:	-
	6.607.20	Del. quantity cm3/:	60.0061.00
3rd speed 1/min:	1000 +		(58.0063.00)
Charge press. hPa:	1000 +		
Supply-pump	+	Mech. shutoff:	
pressure bar:	7.908.50	Mech. Abstellung:	
•	_		
Overlow quantity at	overflow valve:	1st speed 1/min:	1200
40	_	Charge press. hPa:	
1st speed 1/min:	600 1	Del. quantity cm3/:	
Charge press. hPa:		10005.:	
Overflow :		Shutoff	
quantity cm3/10s:	(26.70 98./0)		
2nd speed 1/min:	1200	electromagnet volt:	
		Talla dalikusasu	
Charge press. hPa:	FE (0 170.00	Idle delivery:	
Overflow cm3/10s:	77.00(39.00	A	700
quantity (m5/10s:	(40.00154.00)	1st speed 1/min:	
0-1:		Del. quantity cm3/:	6.5013.50
Delivery-quant. and	breakaway char.:	1000\$.:	(4.5015.50)
	+	Dispersion cm3/:	
	+	1000s.:	(6.5)
1nd speed 1/min:		2nd speed 1/min:	400
Charge-air pressure	-setting +	Del. quantity cm3/:	0.003.00
point hPa:	400	1000s.:	
LDA-stroke mm:	6.2		
Del. quantity cm3/:	81.0082.00	Load-dependent star	t of delivery:
1000s :	(79.0084.00)	Injqty.dif.measure	ement:
2nd speed 1/min:	1550		erret to a
Charge press. hPa:	1000	1st speed 1/min:	1000
Del. quantity cm3/:		Charge press. hPa:	
10005.:		Injqty. cm3/	-13 0 21 5 "
3rd speed 1/min:		difference 1000s.:	
Charge press. hPa:			
charge press. Trd:	1000 +	2nd speed 1/min:	TUUU

Charge press. hPa: 1000 cm3/: "Z" 2.0..8.0" Inj.-qty. difference 1000s.: -TD-travel dif.measurement: : -0.3...0.5 " TD-travel difference mm: -2nd speed 1/min: 1000 Charge press. hPa: 1000 TD-travel: "Z" 0.0..1.4" difference mm: -Automatic starting fuel delivery: 1/min: 410 1st speed Del. quantity cm3/: 80.0...120.0 1000s.: -1/min: 510 2nd speed Del. quantity cm3/: 40.0...80.0 1000s.: -4th speed 1/min: 100 Del. quantity cm3/: 60.0...100.0 1000s.: -Shutoff electromagnet: Cut-in min voltage Rated voltage Mounting and assembly dimensions: Designation K mm: -KF mm: K-OT MS mm: 1.1...1.3 mm: 0,6 SVS max. LDA stroke mm: 6.2 mm: 37.4...40.4 Ya mm: 41.3...46.7 Yb Remarks: Ya = Distance between VE flange and speed-control lever in idle position Measurement point = edge of control lever on drive end Yb = Distance between VE flange and speed-control lever in rated speed position Measurement point = edge of control

Z = Absolute delivery

lever on distributor-head end

Note inst. in remarks column

Test scheet

: CDC

Edition

: 10.93

replaces

: 06.93

Calibrating oil

: ISO-4113

Injection pump

: VE6/12F1250R498-1

Type number

: 0 460 426 212

Customer Part-No. :

Customer-specific information

Customer

: CDC

Engine

: 6 BTAA 5.9B

Power

KW: 100

Speed

1/min: 1250

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil

return temp.

with thermometer : 40.00...48.00

Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly

: 1 688 901 109

Openina

Pressure

bar: 207.00...210.00

Perforated-plate

diameter

mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00

x Wall thickness : 2.00

x Lenath

mm: 840

Start of delivery

Prestroke

mm: -

(from BDC): -

Start of delivery block

Piston stroke mm: 1.15

mm: +-0.02(0.06)

Outlet.

: D

Injection pump setting values

Test specifications in parentheses

Timing-device travel

Speed

1/min: 1000

Charge press. hPa: 1000

Setting value mm: 1.50...1.90

Shutoff

electromagnet Volt: 24

Supply-pump pressure

1/min: 1000 Speed

hPa: 1000 Charge press

Setting value bar: 6.30...6.90

electromagnet Volt: 24

Full-load del. with charge press.:

Speed

1/min: 850

Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 71.50...72.50

Shutoff

electromagnet Volt: 24 Dispersion

cm3/: 5.0 1000s.: (5.0)

Full-load del. w/out charge press.:

Speed

1/min: 500

Del. quantity cm3/

1000s.: 59.50...60.50

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 5.0

1000s.: (6.0)

Low-idle speed regulation

Speed

1/min: 350

Del. quantity cm3/

1000s.: 11.00...15.00

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 5.5

1000s.: (7.0)

Full-load speed regulation

Speed

1/min: 1400

hPa: 1000 Charge press

Del. quantity cm3/ 1000s.: 42.00...48.00

Shutoff

electromagnet Volt: 24

Start:

Speed 1/min: 100 Del. quantity cm3/: 100.00...160.00 mind 1000s.: 100.0 Supply-pump bar: 3.90...4.50 pressure Shutoff Shutoff electromagnet Volt: 24 electromagnet Volt: 24 Overlow quantity at overflow valve: Inspection-pump test specifications Test specifications in parentheses 1st speed 1/min: 500 Charge press. hPa: -Timing-device characteristic: Shutoff electromagnet Volt: 24 : 41.70...83.40 1/min: 1250 2nd speed Overflow cm3/10s: (26.70...98.40) 1/min: 1250 Charge press hPa: 1000 quantity mm: 2.10...2.90 mm: (1.80...3.20) TD travel 2nd speed Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 24 3rd speed 1/min: 1000 electromagnet Volt: 24 Overflow : 55.60...139.00 Charge press hPa: 1000 *auantity* cm3/10s: (40.60...154.00) TD travel mm: 1.50...1.90 mm: (1.00...2.40) Delivery-quant. and breakaway char.: Shutoff electromagnet Volt: 24 7.Rotacao 1/min: 850 1nd speed 1/min: 600 Charge press. hPa: 1000 Charge-air pressure-setting TD travel mm: 0.50...1.30 point hPa: 450 mm: (0.20...1.60) LDA-stroke mm: 4.0 Shutoff Shutoff electromagnet Volt: 24 electromagnet Volt: 24 Del. quantity cm3/: 68.00...69.00 8th speed 1/min: 450 Charge press. hPa: -1000s.: (64.50...72.50) TD travel mm: 2.00...3.00 2nd speed 1/min: 1490 mm: (1.80...3.20) Charge press. hPa: 1000 KSB/AFB Shutoff valve Volt: 24 electromagnet Volt: 24 Shutoff Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) electromagnet Volt: 24 1/min: 1445 3rd speed Charge press. hPa: 1000 Shutoff Supply-pump pressure characteristic: electromagnet Volt: 24 Del. quantity cm3/: 15.00...45.00 1000s.: (15.00...45.00) 1st speed 1/min: 850 Charge press. hPa: 1000 Supply-pump pressure bar: 5.70...6.30 5th speed 1/min: 1400 Shutoff Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 electromagnet Volt: 24
Del. quantity cm3/: 42.00...48.00
1000S.: (39.00...51.00) 2nd speed 1/min: 1000 Charge press. hPa: 1000 Supply-pump pressure bar: 6.30...6.90 1/min: 1250 9th speed Shutoff Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 electromagnet Volt: 24
Del. quantity cm3/: 73.00...77.00
1000S.: (72.00...78.00)
10th speed 1/min: 1100 3rd speed 1/min: 1250 Charge press. hPa: 1000 Supply-pump pressure bar: 7.20...7.80 Shutoff Charge press. hPa: 1000 electromagnet Volt: 24 Shutoff 1/min: 500 4th speed electromagnet Volt: 24 Charge press. hPa: 1000

Del. quantity cm3/: 72.50...75.50 1000s.: (70.50...77.50) 12th speed 1/min: 850 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Del. quyntity cm3/: 71.50...72.50 1000S.: (69.00...75.00) 18th speed 1/min: 500 Charge press. hPa: -Shutoff electromagnet Volt: 24 Del. quantity cm3/: 59.50...60.50 1000s.: (56.00...64.00) Mech. shutoff: Mech. Abstellung: 1st speed 1/min: 1250 Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 24 Electr. shutoff: 1/min: 350 1st speed Charge press. hPa: -Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1st speed 1/min: 350 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 11.00...15.00 1000S.: (8.00...18.00) Dispersion cm3/: 5.5 1000s.: (7.0) 1/min: 400 2nd speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1/min: 130 1st speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 105.00...165.00 1000s.: (105.00...165.00)

Del. quantity cm3/: 55.00...85.00 1000s.: (55.00...85.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 100.00...160.00 1000s.: (100.00...160.00) Shutoff electromagnet: Cut-in : 20.0 min voltage : 24.0 Rated voltage Mounting and assembly dimensions: Designation mm: 3.6...3.8 KF mm: KOT MS mm: mm: 3.7 SVS max. LDA stroke mm: 4.0 mm: 34.8...38.8 Ya Yb mm: 44.9...50.1 Remarks: : CDC # 328 1848 Operate control lever after each manifold-pressure compensator pressure change. \* Correction at adjusting nut Ya = Distance between VE flange and speed-control lever in idle position Measurement point = edge of control lever on drive end Yb = Distance between VE flange and speed-control lever in rated speed

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

2rid speed

electromagnet Volt: 24

Shutoff

1/min: 200

Note inst. in remarks column

Test scheet

: MAN

Edition

: 20.09.93

replaces

Calibrating oil

: ISO-4113

Injection pump

: VE6/12F1100R543

Type number

: 0 460 426 222

Customer Part-No. :

Customer-specific information

Customer

- MAN

Engine

: D 0826 LE 521

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil

•0 return temp.

with thermometer : 40.00...48.00

Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly

: 1 688 901 110

Openina

Pressure

bar: 250.00...253.00

Perforated-plate

diameter

mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6,00

× Wall thickness : 2.00

x Length mm: 840

Start of delivery

mm: 0.2

Prestroke

(from BDC): +0.02(0.04)

Injection pump setting values

Test specifications in parentheses

Timing-device travel

1/min: 900 Speed

Charge press. hPa: 1000

Setting value mm: 2.10...2.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900

Charge press hPa: 1000

Setting value bar: 6.9...7.5

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800

Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 105.5...106.5

Shutoff

electromagnet Volt: 12

Dispersion cm3/: 4.0

1000s.: (4.5)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/

1000s.: 62.50....63.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 300

Del. quantity cm3/

1000s.: 7.50...13.50

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 6.0

1000s.: (6.5)

Full-load speed regulation

1/min: 1250 Speed

Charge press hPa: 1000

Del. quantity cm3/

1000s.: 53.00...57.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100

Del. quantity cm3/: 80.00...140.00

1000s.: mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 900 Overlow quantity at overflow valve: Charge press hPa: 1000 Inj. gty. cm3/1st speed 1/min: 500 difference 1000s.: - 19.0..21.0 # Charge press. hPa: -Shutoff Shutoff electromagnet Volt: 12 SP press.-dif.measurement pompa di mandata (FP) electromagnet Volt: 12 Overflow: 41.70...83.40 : 41.70...83.40 quantity cm3/10s: (26.70...98.40) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Shutoff 1.Speed 1/min: 900 Charge press hPa: 1000 Supply pump pressure electromagnet Volt: 12 : 55.60...139.00 difference bar: -0.1...0.3 #Overflow Shutoff quantity cm3/10s: (40.60...154.00) electromagnet Volt: 12 Delivery-quant. and breakaway char.: Inspection-pump test specifications Test specifications in parentheses 1nd speed 1/min: 500 Timing device characteristic: Charge-air pressure-setting hPa: 350 1st speed 1/min: 800 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 91.50...92.50
1000s.: (88.00...96.00)
2nd speed 1/min: 1350 Charge press hPa: 1000 TD travel mm: 0.50...1.30 mm: (0.20...1.40) Charge press. hPa: 1000 Charge press hPa: 1000 Shutoff TD travel mm: 2.10...2.50 electromagnet Volt: 12 mm: (1.60...3.00) Del. quantity cm3/: 0.00...3.00 Shutoff 1000s.: electromagnet Volt: 12 3rd speed 1/min: 1000 3rd speed 1/min: 1320 Charge press. hPa: 1000 Charge press Shutoff hPa: 1000 mm: 2.10...2.90 TD travel electromagnet Volt: 12 Del. quantity cm3/: ... 15.0 1000s.: mm: (1.80...3.20) Shutoff electromagnet Volt: 12 4th speed 1/min: 1270 Charge press. hPa: 1000 Shutoff Supply-pump pressure characteristic: electromagnet Volt: 12 Del. quantity cm3/: 15.00...55.00 1st speed 1/min: 500 Charge press. hPa: 1000 1000s.: -Supply-pump 5th speed 1/min: 1250 Charge press. hPa: 1000 Shutoff pressure bar: 4.60...5.20 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 53.00...57.00 1000S.: (46.50...63.50) electromagnet Volt: 12 2nd speed 1/min: 900 Charge press. hPa: 1000 1/min: 1100 Supply-pump 6th speed Charge press. hPa: 1000 Shutoff pressure bar: 6.90...7.50 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1100 electromagnet Volt: 12 Del. quantity cm3/: 94.50...99.50 1000s.: (93.00...101.00) 7th speed 1/min: 1000 Charge press. hPa: 1000 Supply-pump pressure bar: 8.00...8.60 Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12

Del. quantity cm3/: 97.00102.00 1000s.: (95.50103.50)	+ Charge press. hPa: 1000 + Injqty. cm3/ : - 10.040.0"
8th speed 1/min: 600 Charge press. hPa: 1000	difference 1000S.: - Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12 Del. quantity cm3/: 106.00111.00	2nd speed 1/min: 900 Charge press. hPa: 1000
1000s.: (104.50112.50)	Injqty. cm3/: "Z" 2.08.0
9th speed 1/min: 500	+ difference 1000S.: -
Charge press. hPa: 1000	+ Shutoff
Shutoff	+ electromagnet Volt: 12
electromagnet Volt: 12	TD 1 2 1 15 C
Del. quantity cm3/: 110.0119.00 1000s.: (108.50120.50)	+ TD-travel dif.measurement:
KSB/AFB	correttore anticipo iniezione (SV): 1st speed 1/min: 900
valve Volt: 500	+ Charge press. hPa: 1000
Timing valve Volt: -	+ TD-travel : - 0.91.1 "
Shutoff	+ difference mm: -
electromagnet Volt: 12	+ Shutoff
Del. quantity cm3/: 62.5063.50	+ electromagnet Volt: 12
1000s.: (60.0066.09)	+ 2nd speed 1/min: 900
Mech. shutoff:	+ Charge press. hPa: 1000 + TD-travel : - 0.02.0'
Mech. Abstellung:	difference mm: -
	+ Shutoff
1st speed 1/min: 1100	+ electromagnet Volt: 12
Charge press. hPa: 1000	+
Del. quantity cm3/: 0.003.00	+ Automatic starting fuel delivery:
1000s.: - Shutoff	1 ot appeal 1/min. 750
electromagnet volt: 12	+ 1st speed 1/min: 350 + Shutoff
The state of the s	+ electromagnet Volt: 12
Electr. shutoff:	Del. quantity cm3/: 90.0130.0
<b>.</b>	† 1000s.: -
1st speed 1/min: 300	+ 0
Charge press. hPa: -	+ 2nd speed 1/min: 450
Del. quantity cm3/: 0.03.0 1000s.: -	+ Shutoff + electromagnet Volt: 12
Shutoff	Del. quantity cm3/: 30.090.0
electromagnet volt: -	10005.: -
	+
Idle delivery:	+ 4th speed 1/min: 100
1st speed 1/min: 350	+ Shutoff
Shutoff	<pre>+ electromagnet Volt: 12 + Del. quantity_cm3/: 80.0140.0</pre>
electromagnet Volt: 12	10005.: -
Del. quantity cm3/: 6.5013.50	10000
1000\$.: (4.5015.50)	+ Shutoff electromagnet:
Dispersion cm3/: 6.0	+
1000\$.: (6.5)	+ Cut-in
2nd speed 1/min: 400 Snutoff	min voltage : 10.0
electromagnet Volt: 12	Rated voltage : 12.0
Del. quantity cm3/: 0.003.00	Mounting and assembly dimensions:
1000s.: -	+ Contents and assembly affiliations.
	+ Designation
Load-dependent start of delivery:	+ K mm: -
Injqty.dif.measurement:	+ KF mm: K-OT
1st speed 1/min: 900	+ MS1 mm: 1.01.3
13 Specu 17 III III 700	+ Ya mm: 37.440.4

Yb

mm: 43.4...48.6

Remarks: Ya = Distance between VE flange and speed-control lever in idle position Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

## Z = Absolute delivery

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Note inst. in remarks column

Test scheet : MAN

Edition : 20.09.93

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/12F1200R563 Type number : 0 460 426 231

Customer Part-No. :

Customer-specific information

Customer

Engine

: D 0826 LOH 06

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temo.

with thermometer : 40.00...48.00

Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 110 assembly

Opening

Pressure bar: 250.00...253.00

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00

x Length

mm: 840

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 850 Charge press. hPa: 1000

Setting value mm: 2.00...2.40 Supply-pump pressure

1/min: 850 Speed Charge press

hPa: 1000 Setting value bar: 7.2...7.8

Full-load del. with charge press.:

1/min: 800 Speed Charge press. hPa: 1000

Del. quaritity cm3/ 1000s.: 94.00...95.00

Dispersion cm3/: 4.0

1000s.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 600

Del. quantity cm3/

1000s.: 59.50...60.50

Low-idle speed regulation

Speed 1/min: 250

Del. quantity cm3/

1000s.: 16.50...23.50

Del. quantity cm3/: 6.0

1000s.: (6.5)

Full-load speed regulation

1/min: 1350 Speed

Charge press hPa: 1000

Del. quantity cm3/

1000s.: 62.00...68.00

Start:

Speed 1/min: 100

Del. quantity cm3/: 60.00...100.00

1000s.: 80.00

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750

hPa: 1000 Charge press

TD travel mm: 0.60...1.40

mm: (0.30...1.70)

2nd speed 1/min: 850

Charge press hPa: 1000 TD travel mm: 2.00...2.40

mm: (1.50...2.90)

3rd speed 1/min: 950 hPa: 1000 Charge press

TD travel mm: 2.90...3.70

mm: (2.60...4.00)

Supply-pump pressure characteristic:	- Del. quantity cm3/: 95.50104.50 - 1000s.: (94.00106.00)
1st speed 1/min: 600	- 9th speed 1/min: 600
Charge press. hPa: 1000	- Charge press. hPa: -
Supply-pump	- Del. quantity cm3/: 59.5060.50
pressure bar: 6.006.60	- 1000s.: (57.5062.50)
2nd speed 1/min: 850	-
Charge press. hPa: 1000	Mach chutaff.
	- Mech. shutoff:
Supply-pump pressure bar: 7.207.89	- Mech. Abstellung:
pressure bar: 7.207.89 - 3rd speed 1/min: 1200 - 3	- A
ora speed 1/min: 1200	- 1st speed 1/min: 1200
Charge press. hPa: 1000	- Charge press. hPa: 1000
Supply-pump	- Del. quantity cm3/: 0.003.00
pressure bar: 8.709.30	- 1000s.: -
- · · · · · · · · · · · · · · · · · · ·	- Shutoff
Overlow quantity at overflow valve:	- electromagnet volt: -
· · · · · · · · · · · · · · · · · · ·	
1st speed 1/min: 600	- Idle delivery:
Charge press. hPa: -	-
Overflow : 41.7083.40	- 1st speed 1/min: 250
quantity cm3/10s: (26.7098.40)	Del. quantity cm3/: 16.5023.50
2nd speed 1/min: 1200	- 1000s.: (14.525.50)
Charge press. hPa: 1000	- Dispersion cm3/: 6.0
Overflow : 55.60139.00	- 1000s.: (6.5)
quantity cm3/10s: (40.60154.00)	
quantity (1115) 105: (40.00154.00)	- 2nd speed 1/min: 400
Dality and a manch and branch and a large	Del. quantity cm3/: 0.003.00
Delivery-quant. and breakaway char.:	- 1000s.: -
†	•
4 1 1 4 1 100	<ul> <li>Automatic starting fuel delivery:</li> </ul>
1nd speed 1/min: 600	•
Charge-air pressure-setting	- 1st speed 1/min: 380
point hPa: 400	- Del. quantity cm3/: 80.0120.0
Del. quantity cm3/: 79.5080.50	- 1000s.: -
1000s.: (77.5082.50)	•
2nd speed 1/min: 1550	- 2nd speed 1/min: 480
Charge press. hPa: 1000	- Del. quantity cm3/: 40.080.0
Del. quantity cm3/: 0.003.00	- 1000s.: -
1000s.: -	
3rd speed 1/min: 1510	- 4th speed 1/min: 100
Charge press. hPa: 1000	Del. quantity cm3/: 60.0100.0
Del. quantity cm3/: 15.0	10008.: +
1000s.: -	10005
4th speed 1/min: 1460	- Shutoff electromagnet:
Charge press. hPa: 1000	- Shuton etettrollagnet:
	· Code du
Del. quantity cm3/: 15.0055.00	· Cut-in
1000s.: -	min voltage : -
5th speed 1/min: 1350	- Rated voltage : -
Charge press. hPa: 1000	•
Del. quantity cm3/: 62.0068.00	Mounting and assembly dimensions:
1000s.: (60.5069.50)	•
6th speed 1/min: 1200	- Designation
Charge press. hPa: 1000	- K mm: ~
Del. quantity cm3/: 87.0092.00	- KF mm: K-OT
1000s.: (85.5093.50)	- MS mm: 0.91.3
7th speed 1/min: 1000	- Ya mm: 37.440.4
Charge press. hPa: 1000	Yb mm: 42.948.1
Del. quantity cm3/: 89.0094.00	
1000s.: (87.5095.50)	- Remarks:
8th speed 1/min: 600	· · · · · · · · · · · · · · · · · · ·
Charge press. hPa: 1000	· ·
7 100 Pr Coo. 18 d. 1000	•

Ya = Distance between VE flange and speed-control lever in idle position Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor—head end

Note remarks

: HAN Test sheet

Edition : 30.11.93

Replaces

Test oil : ISO-4113

Combination no. : 0 400 674 048

Injection pump

Pump designation: PE4A95D42ORS2662-1

EP type number : 0 410 694 994

Governor

Governor design. : RSV350...1100A8C2222

-2R

: 0 420 233 339 Governer no.

Customer-spec. information Customer : HANOMAG

Engine : D944T

1st version kw : 97.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 003

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25

: (2.10...2.30)

Rack travel in mm : 9.00...12.00 Firing order : 1-2-4-3

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm: 12.75...12.85

Del.quantity cm3/: 12.9...13.1

100 s: (12.7...13.3)

cm3 : 0.3Spread

100 s: (0.8)

rpm : 350.0 2nd speed Rack travel in mm: 6.2...6.4 Del.quantity cm3/: 1.1...1.5

100 s: (0.8...1.7)

cm3 : 0.5Spread

100 s: (0.9)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 129.0...131.0 Del.quantity

1000 : (127.0...133.0)

: 3.50 Spread cm3

1000 : (8.00)

RATED SPEED

1st version Control lever

position degrees: 96...104

Testing:

1st rack travel in: 11.80

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1185...1215 Speed

3rd rack travel in: 4.00

Speed : 1205...1235 rom

4th rack travel in: 1300 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.8 Testing: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 350 Rack travel in mm : 6.20...6.40 Rack travel in mm : 2.00 rpm : 470...530 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.75...12.85 2nd speed rpm : 500 Rack travel in m: 13.25...13.35 rom : 900 3rd speed Rack travel in m: 12.90...13.10 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 500 Speed Del.quantity cm3/: 129.5...133.5 1000 s: (127.5...135.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.80 Speed rpm : 1140...1150 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 122.5...137.5 1000 s: (12200...140.0) Rack travel in mm : 19.50...21.00 Remarks:

F07

Note remarks

Test sheet : HAN

Edition : 30.11.93

Replaces

Test oil : ISO-4113

Combination no. : 0 400 674 049

Injection pump

Pump designation : PE4A95D42ORS2662-1

EP type number : 0 410 694 994

Governor

Governor design. : RSV350...1100A8C2222

-3R

: 0 420 233 340 Governer no.

Customer-spec. information Customer : HANOMAG

Engine : D944T

1st version kW : 97.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25 : (2.10...2.30)

Rack travel in mm : 9.00...12.00 Firing order : 1- 2- 4- 3

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.20...11.30

Del.guantity cm3/: 11.2...11.4

100 s: (11.0...11.6)

Spread cm3 : 0.3

100 s: (0.8)

rpm : 350.0 2nd speed Rack travel in mm: 6.2...6.4 Del.quantity cm3/: 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.5100 s: (0.9)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 112.0...114.0 Del.quantity

1000 : (110.0...116.0)

: 3.50 Spread cm3

1000 : (8.00)

RATED SPEED

1st version Control lever

position degrees: 99...107

Testing:

1st rack travel in: 10.25 Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1185...1215

3rd rack travel in: 4.00

Speed rpm : 1210...1240

4th rack travel in: 1300 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring rom : 350 Rack travel in mm: 5.8 Testina: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 350 Rack travel in mm : 6.20...6.40 Rack travel in mm : 2.00 rpm : 470...530 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.20...11.30 rpm : 500 2nd speed Rack travel in m: 11.65...11.75 3rd speed rpm : 950 Rack travel in m: 11.40...11.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/ : 103.5...107.5 1000 s: (101.5...109.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.25 Speed rpm : 1140...1150 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 122.5...137.5 1000 s: (12200...140.0) Rack travel in mm : 19.50...21.00 Remarks: **APPLICATION** 

Wheel Loader

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 : 1-3-4-2 Firing order Note remarks Test sheet : MB 4,0 a : 30.11.93 Edition Phasina : 0-90-180-270 : 11.07.88 Replaces Test oil : 150-4113 Tolerance + - ° : 0.50 (0.75)Combination no. : 0.400 844 083 BASIC SETTING Injection pump 1st speed rpm: 1400 Pump designation : PES4A90D410RS2666 EP type number : 0 410 894 029 Rack travel in mm : 10.90...11.00 Governor Governor design. : RQV300...1400AB1065-Del.quantity cm3/: 6.3...6.4 51 Governer no. : 0 420 212 169 100 s: (6.1...6.6) Customer-spec. information Spread cm3 : 0.3Customer : DAIMLER-BENZ 100 s: (0.5) Engine : 0M364 2nd speed rpm : 300.01st version kW : 66.0 Rack travel in mm: 8.6...8.8 Rated speed : 2800 Del.quantity cm3/: 0.8...1.2 100 s: (0.6...1.4) TEST BENCH REQUIREMENTS cm3 : 0.2Spread 100 s: (0.4) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 000 GUIDE SLEEVE TRAVEL rpm : 300 1st speed Inlet press., bar: 1.00 : 0.80...1.30 travel mm 2nd speed rpm : 500 Test nozzle holder : 2.30...2.80 travel mm assembly : 0 681 343 009 3rd speed rpm : 750 travel mm : 4.10...4.30 Opening 4th speed rpm : 1500 : 172...175 pressure, bar travel mm : 8.50...8.60 GUIDE SLEEVE POSITION Test lines : 1 680 750 015 Control-lever position Degree: -1 rpm : 1500 Outside diameter Speed x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 6.00x1.50x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1400 : 63.0...64.0 per values \_\_\_ Del.quantity 1000 : (61.0...66.0) BEJINNING OF DELIVERY Spread : 3.00 cm3 Test pressure, bar: 25...27 1000 : (5.00) Prestroke mm : 2.25...2.35 RATED SPEED

: (2.20...2.40)

1st version Control lever

position degrees: 107...115

Testina:

1st rack travel in: 9.90

rpm : 1450...1460 Speed

2nd rack travel in: 4.00

Speed rpm : 1560...1590

4th rack travel in: 1700

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 68...76

Testing:

Speed rpm : 100 Minimum rack trave: 10.20 rpm : 300 Speed

Rack travel in mm : 8.60...8.80

CONSTANT REGULATION

Speed rpm : 540...680

TURQUE CONTROL

Dimension a mm : 1.00

Torque control curve - 1st version

1st speed rpm : 1400

Rack travel in m: 10.90...11.00

2nd speed rpm : 630

Rack travel in m: 12.20...12.30 rd speed rpm : 900

3rd speed

Rack travel in m: 11.60...11.80

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 630 Speed rpm

Del.quantity cm3/: 55.5...58.5 1000 s: (53.0...61.0)

rpm : 900 Speed

Del.quantity cm3/: 54.5...57.5

1000 s: (52.0...60.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.90

rpm : 1450...1460

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm: 17.00...17.40

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

F11

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2 Note remarks Test sheet : MB Edition : 30.11.93 Phasing : 0-90-180-270 Replaces Test oil : TSO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 400 844 099 BASIC SETTING Injection pump 1st speed rpm: 1400 Pump designation : PES4A95D41ORS2837 EP type number : 0 410 894 991 Rack travel in mm : 8.80...8.90 Governor Governor design. : RQV300...1400AB1065-Del.guantity cm3/ : 7.1...7.2 29L : 0 420 212 247 Governer no. 100 s: (6.9...7.4) Customer-spec. information Spread cm3 : 0.3Customer : DAIMLER-BENZ 100 s: (0.6) Engine : 0M364 rpm : 300.02nd speed 1st version kW : 65.0 Rack travel in mm: 4.4...4.6 Rated speed : 280G Del.quantity cm3/: 1.0...1.4 100 s: (0.8...1.6) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 000 GUIDE SLEEVE TRAVEL rpm : 300 1st speed Inlet press., bar: 1.00 : 1.10...1.60 travel mm 2nd speed 367 rpm Test nozzle holder 2.16...2.66 travel mm assembly : 0 681 343 009 rpm : 490 3rd speed : 3.17...3.67 travel mm Openina : 1453 4th speed rpm pressure, bar : 172...175 : 8.52...9.02 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 015 Control-lever position Degree: -1 Outside diameter rpm : 1450 Speed x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 6.00x1.50x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1400 per values \_\_\_\_ : 71.5...72.5 Del.quantity 1000 : (69.5...74.5) BEJINNING OF DELIVERY : 3.50 Spread cm3 Test pressure, bar: 25...27 1000 : (6.00) Prestroke mm : 3.20...3.30 RATED SPEED

: (3.15...3.35)

1st version Control lever position degrees: 111...119 Testing: Speed Speed Speed LOW IDLE 1 Control lever

1st rack travel in: 7.85 rpm : 1440...1450 2nd rack travel in: 4.00

rpm : 1520...1550

4th rack travel in: 1570 rpm : 0.00...1.00

position degrees: 73...81

Testina: Speed rpm : 100 Minimum rack trave: 6.00 rpm : 300 Speed

Rack travel in mm : 4.40...4.60

CONSTANT REGULATION Speed rpm : 275...425

TORQUE CONTROL Dimension a mm : 0.10 Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 8.80...8.90 2nd speed rom : 500

Rack travel in m: 8.90...9.00

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500 Del.quantity cm3/ : 51.0...53.0 1000 s: (48.5...56.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 7.85 rpm : 1440...1450 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 14.40...14.60

Remarks:

F13

Note remarks

Test sheet

: 09.12.93 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 844 101

Injection pump

Pump designation : PES4A95D410RS2809 EP type number : 0 410 894 993

Governor

Governor design. : RQV300...1400AB1065-

23L

: 0 420 212 169 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: 0M364 Engine

1st version kW : 65.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEJINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rom : 1400

Rack travel in mm : 9,90...10.00

Del.quantity cm3/: 6.4...6.6

100 s: (6.2...6.8)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0Rack travel in mm: 8.5...8.7 Del.quantity cm3/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 travel mm : 0.81...1.31

rpm : 593 2nd speed : 3.21...3.71

travel mm 3rd speed : 643 rpm

: 3.61...4.11 travel mm

4th speed : 1463 rom

travel mm : 7.89...8.39

GUIDE SLEEVE POSITION

Control-lever position

Dearee: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 64.5...66.5

1000 : (62.5...68.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 111...119 Testing: 1st rack travel in: 8.90 rpm : 1440...1450 Speed 2nd rack travel in: 4.00 rpm : 1535...1565 Speed 4th rack travel in: 1670 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 73...81 Testing: : 100 Speed rom Minimum rack trave: 9.60 rpm : 300 Speed Rack travel in mm: 8.50...8.70 CONSTANT REGULATION rpm : 550...700 Speed TORQUE CONTROL Dimension a mm : 1.20 Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 9.90...10.00 2nd speed rpm : 400 Rack travel in m: 11.10...11.30 3rd speed rpm : 630 Rack travel in m: 10.70...11.00 4th speed rpm : 925 Rack travel in m: 10.40...10.70 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 400 rpm Speed Del.quantity cm3/: 49.0...53.0 1000 s: (46.5...55.5) : 630 Speed rpm Del.guantity cm3/: 51.5...55.5 1000 s: (49.0...58.0) rpm : 925 Speed Del.quantity cm3/: 57.0...61.0 1000 s: (54.5...63.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 8.90

Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 14.40...14.60

:

Remarks:

F15

Note remarks

Test sheet : MB 6,0 j 4 : 16.08.93 Edition : 04.92 Replaces : ISO-4113 Test oil

Combination no. : 0 400 846 591

Injection pump

Pump designation : PES6A95D410RS2797 EP type number : 0 410 896 900

Governor

: RQV300...1400AB1065-Governor design.

22L

: 0 420 212 226 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 97.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. "C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEJINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 10.10...10.20

Del.quantity cm3/: 6.1...6.3

100 s: (5.9...6.5)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm : 8.9...9.1 Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.4)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 0.80...1.30

2nd speed rpm : 500

2.30...2.80 travel mm

rpm : 750 3rd speed

travel mm : 4.10...4.30 4th speed rpm : 1500

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1500 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 61.0...63.0 Del.quantity

1000 : (59.0...65.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever Testing:

position degrees: 106...114

1st rack travel in: 9.10

Speed rpm : 1450...1460

2nd rack travel in: 4.00

Speed rpm : 1540...1570

4th rack travel in: 1670

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 69...77

Testing:

Speed rpm : 100 Minimum rack trave: 9.80 rpm : 300

Rack travel in mm : 8.90...9.10

CONSTANT REGULATION

Speed rpm : 500...650

TORQUE CONTROL

Dimension a mm : 1.40

Torque control curve - 1st version

1st speed rpm : 1400

Rack travel in m: 10.10...10.20

2nd speed rpm : 400

Rack travel in m: 11.50...11.70

3rd speed rpm : 630

Rack travel in m: 11.10...11.40

4th speed rpm : 925

Rack travel in m: 10.60...10.90

START CUT-OUT

Speed

1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 400 Speed

Del.quantity cm3/: 49.0...52.0

1000 s: (46.5...54.5)

Speed rpm : 630

Del.quantity cm3/: 49.0...53.0 1000 s: (46.5...55.5)

Speed rpm : 925

Del.quantity cm3/: 55.5...59.5

1000 s: (53.0...62.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.10

Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 14.60...15.00

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2 Note remarks : KHD 1 g 34 Test sheet Edition : 30.11.93 Phasina : 0-90-180-270 : 12.02.88 Replaces : ISO-4113 Test oil Tolerance + - ° : 0.50 (0.75) Combination no. : 0 400 864 070 BASIC SETTING Injection pump 1st speed rpm: 1175 Pump designation : PES4A85D410/3RS2732 EP type number : 0 410 884 947 Rack travel in mm : 9.90...10.00 Governor Governor design. : RSV325...1175A8C2223 Del.quantity cm3/: 6.8...6.9 -2L Governer no. : 0 420 232 484 100 s: (6.6...7.1) Customer-spec. information Spread cm3 : 0.3Customer : KHD 100 s: (0.4) Engine : F4L913 rpm : 325.0 2nd speed 1st version kW : 56.0 Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 0.8...1.4 Rated speed : 2350 100 s: (0.6...1.6) TEST BENCH REQUIREMENTS Spread cm3 : 0.2100 s: (0.4) Test oil inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 : 1 417 413 000 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Inlet press., bar: 1.00 Governor spring pre-tension Test nozzle holder Click setting x : 5.00assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Opening. : 172...175 pressure, bar 1st version Speed rpm : 1175 : 68.0...69.0 Del.quantity Test Lines : 1 680 750 014 1000 : (66.0...71.0) : 3.00 Spread cm3 Outside diameter 1000 : (4.50) x Wall thickness x Length mm : 6.00x2.00x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Control lever Set equal delivery quant. position degrees: 102...110 per values Testing: BEJINNING OF DELIVERY 1st rack travel in: 8.90 Test pressure, bar: 25...27 rpm : 1215...1225 Speed 2nd rack travel in: 4.00

rpm : 1245...1275

Speed

3rd rack travel in: 4.00

Prestroke mm

: 2.50...2.60

: (2.45...2.65)

rpm : 1250...1280 Speed 4th rack travel in: 1425 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 5.5 Testina: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 325 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 450...510 TORQUE CONTROL Torque control curve - 1st version rom : 1175 1st speed Rack travel in m: 9.90...10.00 rpm : 500 2nd speed Rack travel in m: 10.55...10.65 4th speed rpm : 800Rack travel in m: 10.25...10.45 FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: 61.0...63.0 1000 s: (58.5...65.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.90 rpm : 1215...1225 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 115.0...125.0 1000 s: (112.0...128.0)

Rack travel in mm : 17.70...17.90

Remarks:

: RENAULT

**APPLICATION** 

Tractor (tractor engines)

Note remarks

Test sheet : MWM : 30.11.93 Edition : 18.12.92 Replaces

Test oil : ISO-4113

Combination no. : 0 400 864 094

Injection pump

Pump designation : PES4A9UD320/3RS2743

EP type number : 0 410 894 034

Governor

Governor design. : RSV325...1150A5c505-

5R

Governer no. : C 420 233 289

Customer—spec. information Customer : MWM

: TD226B-4 Enaine

1st version kW : 63.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEJINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00 & maximum rack tra: 21.00

Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rom: 1150

Rack travel in mm : 9.50...9.60

Del.quantity cm3/ : 7.1...7.2

100 s: (6.9...7.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0Rack travel in mm : 6.6...6.8 Del.quantity cm3/ : 1.0...1.6

100 s: (0.8...1.8)

cm3 : 0.2 Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rom : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed rpm : 1150

: 71.5...72.5 Del.quantity 1000 : (69.5...74.5)

: 3.00 cm3

1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 96...104

Testing: 1st rack travel in: 8.50 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 rpm : 1210...1240 Speed 3rd rack travel in: 4.00 Speed rpm : 1230...1260 4th rack travel in: 1330 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 65...73 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 6.2 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 325 Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 rpm : 415...475 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 9.50...9.60 2nd speed rpm : 500 Rack travel in m: 9.50...9.70 FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed rpm Del.quantity cm3/ : 53.5...58.5 1000 s: (51.5...60,5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.50 rpm : 1190...1200 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 138.0...148.0 1000 s: (135.0...151.0) Rauk travel in mm : 19.50...21.00 Remarks: ;

**APPLICATION** 

Excavator

F21

Note remarks

: CDC Test sheet

Edition : 30.11.93

Replaces

Test oil : ISO-4113

Combination no. : 0 400 864 096

Injection pump

Pump designation : PES4A1000320/3RS2846

EP type number : 0 410 804 002

Governor

Governor design. : RSV400...1250A0c2267

: 0 420 233 335 Governer no.

Customer-spec, information Customer : CDC

Engine : 4 BT

: 446.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 essembly

Openina

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEJINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.10...3.20

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasina : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00

& maximum rack tra: 21.00 Difference \* CS : 3.50...4.50

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 12.15...12.25

Del.quantity cm3/: 10.5...10.7

100 s: (10.3...10.9)

Spread cm3 : 0.3

100 s: (0.8)

2nd speed rpm : 400.0

Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 1.5...1.9

100 s: (1.2...2.1)

cm3 : 0.5 Spread

100 s: (0.9)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 700

Del.quantity : 105.0...107.0

1000 : (103.0...109.0) cm3 Spread : 3.00

1000 : (8800)

RATED SPEED

1st version Control lever

position degrees: 104...112

Testing:

1st rack travel in: 11.20

rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1370...1400 4th rack travel in: 1475

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 80...88

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 6.2

Testing:

rpm : 100 Speed

Minimum rack trave: 19.50

rpm : 400

Rack travel in mm : 6.10...6.30

Rack travel in mm: 2.00

Speed rom : 530...590

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 12.15...12.25

2nd speed rpm : 750

Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 700 Pressure

Rack travel mm : 12.25...12.35

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 360

Rack travel in m: 10.35...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

: 750 rpm

De..quantity cm3/: 111.0...115.0 1000 s: (109.0...117.0)

Aneroid pressure h: -

Speed rpm : 500 Del.guantity cm3/: 75.0...77.0

1000 s: (73.0...79.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/ : 162.5...177.5

1000 s: (160.0...180.0) Rack travel in mm: 19.50...21.00

Remarks:

: C.D.C. # 3925763

Note remarks

Test sheet : KHD 1 g 45 : 30.11.93 Edition Replaces : 05.03.90 Test oil : ISO-4113

Combination no. : 0 400 866 159

Injection pump

Pump designation: PES6A85D410/3RS2761

EP type number : 0 410 886 895

Governor

: RSV325...1400A2C2245 Governor design.

: 0 420 232 537 Governer no.

Customer-spec, information Customer : KHD

Engine : BF6L913T

1st version kW : 85.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening .

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEJINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 6.9...7.1

100 s: (6.8...7.2)

cm3 : 0.3Spread

100 s: (0.7)

rpm : 325.0 2nd speed Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.3...1.9

100 s: (1.1...2.1)

cm3 : 0.4 Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

: 69.5...70.5 Del.quantity 1000 : (67.5...72.5)

: 3.00 Spread cm3

1000 : (7.00)

RATED SPEED

1st version Control lever

position degrees: 95...103

Testing:

1st rack travel in: 8.70

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

Speed rpm : 1265...1295

3rd rack travel in: 4.00

rpm : 1285...1315 Speed 4th rack travel in: 1445 Speed rpm : 0.30...1.40LOW IDLE 1 Control Lever position degrees: 64...72 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm: 6.2 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 325 Rack travel in mm : 6.60...6.80 Rack travel in mm: 2.00 Speed : 420...480 COM TORQUE CONTROL Torqué control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 10.40...10.50 2nd speed rpm : 500 Rack travel in m: 10.95...111.05 3rd speed rpm : 800 Rack travel in m: 10.90...11.10 4th speed rpm : 975 Rack travel in m: 10.70...10.90 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 58.5...61.5 1000 s: (56.5...63.5) Speed rpm : 800 Del.quantity cm3/: 62.5...65.5 1000 s: (60.5...67.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.70 Speed rpm : 1240...1250 STARTING FUEL DELIVERY

**APPLICATION** 

Tractor (tractor engines)

Remarks:

Speed

: TM 2

1000 s: (85.0...105.0)

: 100

COM Del.quantity cm3/: 87.5...102.5

Rack travel in mm: 17.80...18.20

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM : 30.11.93 Edition Replaces Test oil : ISO-4113 Combination no. : 0 400 866 177 Injection pump Pump designation : PES6A95D12ORS2773 : 0 410 896 904 EP type number Governor Governor design. : RSV350...1050A002260 -1R : U 420 233 334 Governer no. Customer-spec. information Customer : CUMMINS Engine : 6 BT 1st version kW : 150.0 : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.00 Test nozzle holder : 1 688 901 101 assembly Opening : 207...210 pressure, bar Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Firing order : 1-3-4-2 Phasing : 0-90-180-270 : 0.50 (0.75) Tolerance + - \* BASIC SETTING rom : 10501st speed Rack travel in mm : 11.10...11.20 Del.guantity cm3/: 9.0...9.2 100 s: (8.8...9.4) cm3 : 0.3Spread 100 s: (0.8) 2nd speed rpm : 350.0 Rack travel in mm : 7.4...7.6 Del.quantity cm3/: 1.4...1.8 100 s: (1.1...2.0) cin3 : 0.5 Spiread 100 s: (0.9) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting  $\bar{x}$ : 1.75 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1050Aneroid pressure h: 900 Del.quantity : 90.5...2.. 1000 : (87.5...94.5) cm3 : 3.50Spread 1000 : (8.00)RATED SPEED 1st version Control lever position degrees: 82...90 Testing: 1st rack travel in: 10.15 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1160...1190 Speed

Rack travel in mm : 9.00...12.00

BEJINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 2.10...2.20

: (2.05...2.25)

3rd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 62...70 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.00 Testina: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm: 350
Rack travel in mm: 7.40...7.60
Rack travel in mm: 2.00 Speed rpm : 480...540 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 11.10...11.20 2nd speed rpm : 500 Rack travel in m: 11.15...11.35 Aneroid/Altitude Compensator Test 1st version Setting Speed man : 500 Pressure hPa : 900 : 11.10...11.20 Rack travel mm Measurement Speed 1/min : 500 1st pressure hPa : -Rack travel in m: 9.70...9.90 2nd pressure hPa : 410 Rack travel in m: 10.45...10.55 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900

: 500 Speed rpm Del.quantity cm3/ : 76.5...78.5 1000 s: (74.5...80.5) Aneroid pressure h: -: 500 Speed rpm

Deciquantity cm3/: 56.0...58.0 1000 s: (54.0...60.0)

1st version 1mm rack travel less than full load rack tr: 10.15

STARTING FUEL DELIVERY

Speed

rpm : 100 Speed Del.quantity cm3/: 102.5...117.5 1000 s: (100.0...120.0) Rack travel in mm: 14.80...15.20

:

rem : 1090...1110

Remarks:

BREAKAWAY

Note remarks

Test sheet : CUM Edition : 27.09.93 Replaces : 06.93 Test oil : 150-4113

Combination no. : 0 400 866 181

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 030

Governor

Governor design. : R\$V450...1100A0c2190

-59R

Governer no. : 0 420 233 298

Customer-spec. information Customer : CDC

Engine : 6 CT

1st version kw : 140.0 2nd version kW : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl, no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 11.3...11.5

100 s: (11.1...11.7)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 450.0Rack travel in mm: 5.7...5.9

Del.quantity cm3/ : 1.6...2.0

100 s: (1.4...2.3)

cm3 : 0.6 Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 113.5...115.5

1000 : (111.5...117.5)

Spread cm3

: 4.00 : (6.50) 1000

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testina: 1st rack travel in: 10.90 rpm : 1160...1170 2nd rack travel in: 4.00 rpm : 1250...1260 Speed 3rd rack travel in: 4.00 Speed rpm : 1250...1280 4th rack travel in: 1350 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 31...39 Setting point w/out bumper spring Speed rpm : 450 Rack travel in mm: 5.3 Testina: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 450 Rack travel in mm : 5.70...5.90 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.90...12.00 2nd speed rpm : 750 Rack travel in m: 12.70...12.90 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 124.5...128.5 1000 s: (122.5...130.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 1160...1170 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 130.0...150.0 1000 s: (125.0...155.0) Rack travel in mm : 20.00...21.00

rpm : 450 Rack travel in mm : 5.70...5.90

Del.quantity cm3/: 16.5...20.5 1000 s: (14.0...23.0) Spread cm3 : 6.001000 s: (8.00) Remarks: : C.D.C. # 3922145 Start-of-delivery mark 11° cam angle after start of delivery cyl. 1 **APPLICATION** Tractor (tractor engines)

LOW IDLE

Speed

Note remarks

: VAL 4,4 c : 30.11.93 : 21.09.92 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 400 874 250

Injection pump

Pump designation : PES4A95D32ORS2807 EP type number : 0 410 894 994

Governor

Governor design. : RSV375...1125A2C2178

-7R

: 0 420 233 279 Governer no.

Customer-spec. information Customer : VALMET

Engine : 420 DS

1st version kW : 75.0 : 2250 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEJINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 4- 3

Phasing : 0-90-180-270

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm: 1125

Eack travel in mm : 11.20...11.30

Del.quantity cm3/: 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/: 1.8...2.4

100 s: (1.5...2.6)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1125

: 86.5...88.5 Del.quantity

1000 : (84.5...90.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 97...105 Testina: 1st rack travel in: 10.20 rpm : 1165...1175 Speed 2nd rack travel in: 4.00 rpm : 1235...1265 Speed 3rd rack travel in: 4.00 rpm : 1245...1275 Speed 4th rack travel in: 1410 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 71...79 Setting point w/out bumper spring rpm : 375 Rack travel in mm: 5.1 Testina: : 100 Speed rpm Minimum rack trave: 19.50 Speed : 375 rpm Rack travel in mm : 5.50...5.70 Rack travel in mm: 2.00 Speed : 465...525 rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1125 Rack travel in m: 11.20.. 11.30 2nd speed rpm : 500 Rack travel in m: 11.60...11.70 rpm : 750 3rd speed Rack travel in m: 11.55...11.65 4th speed rpm : 965 Rack travel in m: 11.25...11.45 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5) Speed : 750 rpm Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5)

## BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20 Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 205.0...215.0

1000 s: (202.0...218.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 375

Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 18.0...24.0

1000 s: (15.5...26.5)

Spread

cm3 : 3.50 1000 s: (5.00)

Remarks:

**APPLICATION** 

Tractor (tractor engines)

**GO3** 

Note remarks

Test sheet : VAL Edition

: 1.12.93

Replaces Test oil

: ISO-4113

Combination no.

: 0 400 874 254

Injection pump

Pump designation : PES4A95D32ORS2847 EP type number : 0 410 894 990

Governor

Governor design.

: RSV375...1200A5C2268

Governer no.

: 0 420 233 337

Customer-spec. information Customer

: VALMET

Engine

: 420 ps

1st version kW

: 84.0

Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEJINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45... 2.65)

Rack travel in mm : 9.00...12.00

: 1-2-4-3 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFFRENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference \* CS : 4.50...5.50

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.45...12.55

Del.quantity cm3/: 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm: 5.1...5.3

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed rpm : 1200

Aneroid pressure h: 700

: 99.0...101.0 Del.quantity

1000 : (97.0...103.0)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 100...108 Testina: 1st rack travel in: 11.50 Speed rpm : 1240...1250 2nd rack travel in: 4.00 rpm : 1310...1340 Speed 3rd rack travel in: 4.00 Speed rpm : 1315...1345 4th rack travel in: 1425 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 69...75 Setting point w/out bumper spring rpm : 375 Rack travel in mm: 4.7 Testing: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 375
Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 Speed rpm : 445...505 TORQUE CONTROL Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 12.45...12.55 2nd speed rpm : 500 Rack travel in m: 13.15...13.25 3rd speed rpm : 1050 Rack travel in m: 12.90...13.10 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom Pressure hPa : 700 : 13.15...13.25 Rack travel mm Measurement Speed  $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 11.90...12.10 2nd pressure hPa : 440 Rack travel in m: 12.85...12.95 3rd pressure hPa : 350 Mack travel in m: 12.25...12.55

1st version Aneroid pressure h: 700 Speed rpm : 500 Del.quantity cm3/: 89.0...93.0 1000 s: (87.0...95.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 78.0...80.0 1000 s: (76.0...82.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 1240...1250 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 200.0...210.0 1000 s: (195.0...215.0) Rack travel in mm : 20.25 LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 18.0...24.0
1000 s: (15.5...26.5)
Spread cm3 : 3.50
1000 s: (5.00)

:

Remarks:

APPLICATION

Tractor (tractor engines)

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB

Edition : 1.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 331A

Injection pump

Pump designation : PES6A90D410RS2710 EP type number : 0 410 896 082

Governor

Governor design. : RSV350...1400A0c2006

-2L

Governer no. : 0 420 232 453

Customer-spec. information

Customer : MERCEDERS-BEN7

Engine : OM 366

1st version kW : 85.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEJINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.25...2.35 Prestroke mm

: (2.20...2.40)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 10.30...10.40

Del.guantity cm3/ : 5.6...5.7

100 s: (5.4...5.9)

cm3 : 0.3 Spread

100 s: (0.4)

rpm : 350.02nd speed Rack travel in mm: 8.4...8.6 Del.quantity cm3/: 1.0...1.4 100 s: (0.8...1.6)

Spread cm3 : 0.2100 s: (0.4)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1200

: 56.0...57.0 Del.quantity 1000 : (54.0...59.0)

: 3.00 cm3

Spread 1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 101...109

Testing:

1st rack travel in: 9.30

Speed rpm : 1240...1250

2nd rack travel in: 4.00

rpm : 1295...1325

4th rack travel in: 1360

rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring : 350 rpm Rack travel in mm: 8.5 Testing: rpm : 100 Speed Minimum rack trave: 19.50 : 400 Speed **LDW** Rack travel in mm : 8.40...8.60 Rack travel in mm : 2.00 Speed rom : 480...540 SET IDLE AUXILIARY SPRING rpm : 100Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 10.30...10.40 2nd speed rpm : 500 Rack travel in m: 11.95...12.05 : 700 3rd speed rpm Rack travel in m: 11.90...12.10 4th speed rom : 1000 Rack travel in m: 10.95...11.25 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 500 rpm Del.quantity cm3/: 55.0...57.0 1000 s: (52.5...59.5) Spread cm3 : ? 1000 s: (5.50) Speed rpm : 700 Del.auantity cm3/: 58.0...60.0 1000 s: (55.5...62.5) Spread cm3 : ? 1000 s: (5.50) : 1000 Speed rpm Del.quantity cm3/: 57.0...59.0 1000 s: (54.5...61.5) Spread cm3 : ?1000 s: (5.50) **BREAKAWAY** 1st version 1m. rack travel less than full load rack tr: 9.30 rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

: 100 Speed rom Del.quantity cm3/: 78.0...88.0

1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.50...5.70 Del.quantity cm3/ : 13.0...17.0

1000 s: (10.5...19.5)

:

cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

G07

Note remarks

Test sheet : FOR Edition : 1.12.93 Replaces : 22.01.93 Test oil : ISO-4113

Combination no. : 0 400 876 405

Injection pump

Pump designation : PES6A95D410RS2835 EP type number : 0 410 896 896

Governor

Governor design. : RSV400...1050A2C2263

-1L

Governer no. : 0 420 232 584

Customer-spec. information

Customer : FNH-GEOTECH

Engine : 7.5 L-8640 Trak

1st version kW : 131.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder

assembly : 1 688 901 101

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.55...2.65 : (2.50...2.70)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.10...12.30

Del.quantity cm3/: 11.1...11.5

100 s: (10.8...11.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 450.0 Rack travel in mm : 4.9...5.1 Del.quantity cm3/: 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm: 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 1200

Del.quantity : 111.0...115.0 1000 : (108.5...117.5)

cm3 : 3.50

1000 : (6.00)

RATED SPEED

Spread

1st version Control lever

position degrees: 95...103

Testing:

1st rack travel in: 11.20

Speed rpm : 1093...1097 cm3 : 3.50Spread 2nd rack travel in: 4.00 1000 s: (6.00) rpm : 1163...1177 Speed Aneroid pressure h: -4th rack travel in: 1300 Speed rpm : 500 Speed rpm : 0.30...1.40 Del.quantity cm3/: 89.0...91.0 1000 s: (86.5...93.5) LOW IDLE 1 Control lever position degrees: 70...78 **BREAKAWAY** Setting point w/out bumper spring rpm : 450 1st version Rack travel in mm: 4.5 1mm rack travel less than Testing: full load rack tr: 11.20 Speed rpm : 100 Speed rpm : 1093...1097 Minimum rack trave: 19.50 rpm : 450 STARTING FUEL DELIVERY Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 Speed rpm : 570...630 rpm : 100 Del.quantity cm3/: 185.0...205.0 TORQUE CONTROL 1000 s: (182.0...208.0) Torque control curve - 1st version rpm : 1050 1st speed LOW IDLE Rack travel in m: 12.10...12.30 Speed rpm : 400 Rack travel in mm : 5.50...5.70 Del.quantity cm3/ : 13.0...17.0 2nd speed rpm : 750 Rack travel in m: 14.00...14.20 3rd speed rpm : 925 Rack travel in m: 13.10...13.40 1000 s: (10.5...19.5) cm3 : 3.50 4th speed rpm : 1050 Spread Rack travel in m: 11.60...11.80 1000 s: (5.50) Aneroid/Altitude Remarks: Compensator Test Setting and blocking of pointer of 1st version start-of-delivery sensor on cyl. 1 Setting start of delivery Speed : 500 rpm hPa : 1200 Pressure Hydraulic latching of starting Rack travel mm : 14.00...14.20 delivery. Measurement Latching at 0.75 bar...0.85 bar. 1/min : 500Speed Unlatching at 0.40 bar...0.50 bar 1st pressure hPa : -Rack travel in m: 10.10...10.20 APPLICATION 2nd pressure hPa : 800 Rack travel in m: 13.50...13.60 Tractor (tractor engines) 3rd pressure hPa : 500 Rack travel in m: 11.60...12.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 750 Speed Del.quantity cm3/: 140.0...142.0 1000 s: (138.0...144.0)

Note remarks

Test sheet : FOR

Edition : 01.12.93 : 03.02.93 Replaces Test oil : ISO-4113

Combination no. : 0 400 876 406

Injection pump

Pump designation : PES6A95D410RS2835

EP type number : 0 410 896 896

Governor

Governor design. : RSV400...1050A2c2263

-2L

: 0 420 232 585 Governer no.

Customer-spec. information

Customer : FNH-GEOTECH

: 7.5 L-8740 Trak Engine

: 142.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter × Wall thickness

: 6.00x2.00x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.55...2.65 Prestroke mm

: (2.50...2.70) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 13.0...13.4

100 s: (12.7...13.6)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 450.02nd speed Rack travel in mm : 5.2...5.3 Del.quantity cm3/ : 1.2...1.6 100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050Speed

Aneroid pressure h: 1200

: 130.0...134.0 Del.quantity 1000 : (127.5...136.5)

: 3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Testina:

1st rack travel in: 12.40

rpm : 1093...1098 Speed 2nd rack travel in: 4.00 rpm : 1163...1178 Speed 4th rack travel in: 1300 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring : 450 rom Rack travel in mm: 4.6 Testina: Speed rpm Minimum rack trave: 19.50 Speed rpm : 450 Rack travel in mm : 5.00...5.20 Rack travel in mm: 2.00 Speed rpm : 580...650 TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 13.40...13.50 rpm : 650 2nd speed Rack travel in m: 15.00...15.20 rpm : 900 3rd speed Rack travel in m: 14.10...14.50 4th speed rpm : 1050 Rack travel in m: 12.90...13.00 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 rpm Pressure hPa : 1200 Rack travel mm : 15.00...15.20 Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.55...10.65 2nd pressure hPa : 900 Rack travel in m: 14.00...14.10 3rd pressure hPa : 650 Rack travel in m: 12.20...12.60 FUEL DELIVERY CHARACTERISTICS 1s. version Aneroid pressure h: 1200 Speed

Spread cm3 : 3.501000 s: (-) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 99.0...101.0 1000 s: (96.5...103.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 1093...1098 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 185.0...205.0 1000 s: (182.0...208.0) LOW IDLE : 400 Speed rpm Rack travel in mm : 5.20...5.50 Del.quantity cm3/: 13.0...17.0 1000 s: (10.5...19.5) Spread cm3: 3.50 1000 s: (5.50) Remarks: : Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery Hydraulic latching of starting delivery. Latching at 0.75 bar...0.85 bar. Unlatching at 0.40 bar...0.50 bar APPLICATION Tractor (tractor engines)

rpm : 650 Del.quantity cm3/: 164.0...166.0

1000 s: (162.0...168.0)

Note remarks

Test sheet : FOR Edition : 01.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 410

Injection pump

Pump designation : PES6A95D41ORS2838 EP type number : 0 410 896 895

Governor

Governor design. : RSV400...1050A2c2263

-6L

: 0 420 232 589 Governer no.

Customer-spec, information

Customer : FNH-GEOTECH

Engine : 7.5 15

1st version kW : 119.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.55...2.65 : (2.50...2.70) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 10.75...10.85

Del.quantity cm3/ : 9.4...9.6

100 s: (9.2...9.8)

Spread cm3 : 0.3

100 s: (0.8)

rpm : 450.0 2nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.3...1.7

100 s: (1.1...2.0)

Spread cm3 : 0.5

100 s: (0.9)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting  $\bar{x}$ : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 700

: 94.5,..96.5 Del.quantity 1000 : (92.5...98.5)

: 3.50 cm3

1000 : (8.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 103...111

Testing:

1st rack travel in: 9.80

rpm : 1293...1298 Speed 2nd rack travel in: 4.00 rpm : 1368...1373 Speed 4th rack travel in: 1475 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 74...82 Setting point w/out bumper spring rpm : 450 Rack travel in mm: 4.9 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 450 Rack travel in mm : 5.30...5.50 Rack travel in mm: 2.00 Speed rpm : 520...580 SET IDLE AUXILIARY SPRING Speed rpm : 450 Rack travel in mm: 0.50 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 10.75...10.85 2nd speed rpm : 600 Rack travel in m: 10.75...10.95 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 700 Pressure Rack travel mm : 10.70...10.90 Measurement Speed  $1/\min : 500$ 1st pressure hPa :-Rack travel in m: 7.90...8.10 2nd pressure hPa : 475 Rack travel in m: 10.15...10.25 3rd pressure hPa : 310 Rack travel in m: 8.80...9.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 600 Speed Del.quantity cm3/: 96.5...100.5

1000 s: (94.5...102.5)

Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 60.5...62.5 1000 s: (58.5...64.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 Speed rpm : 1293...1298 STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 192.5...207.5 1000 s: (190.0...210.0) Rack travel in mm: 18.10 LOW IDLE Speed rpm : 400 Rack travel in mm : 5.20...5.50 Del.quantity cm3/ : 13.0...17.0 1000 s: (10.5...19.5) Soread cm3 : 3.501000 s: (5.50) Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery Hydraulic latching of starting delivery. Latching at 0.75 bar...0.85 bar. Unlatching at 0.40 bar...0.50 bar

Note remarks

Test sheet : KHD Edition : 1,12,93 Replaces : 26.02.93 Test oil : ISO-4113

Combination no. : 0 400 876 415

Injection pump

Pump designation : PES6A95D410RS2839 EP type number : 0 410 896 894

Governor

: RSV325...1250A5C1164 Governor design.

Governer no. : 0 420 232 593

Customer-spec. information Customer : KHD

Engine : BF6L913C

1st version kW : 164.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEJINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70

: (2.55...2.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 11.6...11.8

100 s: (11.4...12.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 1200

Del.quantity : 116.0...118.0 1000 : (114.0...120.0)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

Spread

1st version Control Lever

position degrees: 96...104

Testina:

1st rack travel in: 11.50

Speed rpm : 1290...1300

2nd rack travel in: 4.00

rpm : 1315...1345 Speed

3rd rack travel in: 4.00 rpm : 1339...1369 Speed 4th rack travel in: 1540 rom : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 62...70 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 6.0 Testing: rpm : 100 Speed Minimum rack trave: 19.50 : 325 rpm Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed rpm : 460...520 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 12.50...12.60 2nd speed : 500 rom Rack travel in m: 12.50...12.70 3rd speed rpm : 1150 Rack travel in m: 12.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 1200 Rack travel mm : 12.50...12.60 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.30...10.40 2nd pressure hPa : 450 Rack travel in m: 11.70...11.80 3rd pressure hPa : 300 Rack travel in m: 11.00...11.20 FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 1200 Speed rpm : 1150 Dec.quantity cm3/: 115.5...118.5 1000 s: (113.0...121.0)

Del.quantity cm3/: 74.0...76.0 1000 s: (72.0...78.0) **BREAKAWAY** 1st version

full load rack tr: 11.50 Speed rpm : 1290...1300

STARTING FUEL DELIVERY

1mm rack travel less than

Speed : 100 rpm Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 17.10...17.30

Remarks: **APPLICATION** 

Combine-harvester

Speed

Arieroid pressure h: -

rom

: 500

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4Note remarks Test sheet : MB : 1.12.93 Edition Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 400 876 418 BASIC SETTING Injection pump rpm: 1200 1st speed Pump designation : PES6A95D410RS2844 EP type number : 0 410 896 893 Rack travel in mm : 8.65...8.75 Governor : RSV350...1200A1c1163 Governor design. Del.quantity cm3/ : 5.5...5.7 -3L : 0 420 232 596 Governer no. 100 s: (5.3...5.9) Customer-spec. information cm3 : 0.3Spread Customer : MERCEDES-BENZ 100 s: (0.6) Engine : OM 366 rpm : 350.0 2nd speed : 75.0 1st version kW Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 0.8...1.4 Rated speed : 2400 100 s: (0.5...1.6) TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 : 1 419 992 198 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Inlet press., bar: 1.50 Governor spring pre-tension Click setting x : 5.00Test nozzle holder assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Openina pressure, bar : 172...175 1st version Speed rpm : 1200 : 55.0...57.0 Del.quantity Test Lines : 1 680 750 015 1000 : (53.0...59.0) : 3.50 Spread cm3 Outside diameter 1000 : (6.00)x Wall thickness x Length mm : 6.00x1.50x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Control lever Set equal delivery quant. position degrees: 108...116 per values Testing: BEJINNING OF DELIVERY 1st rack travel in: 7.70 Test pressure, bar: 25...27 rpm : 1240...1245 Speed 2nd rack travel in: 4.00 Prestroke mm : 3.20...3.30 rpm : 1263...1280

Speed

3rd rack travel in: 4.00

: (3.15...3.35)

rpm : 1315...1345 Speed 4th rack travel in: 1450 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: -3 Setting point w/out bumper spring : 350 rpm Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 350 Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 Speed rpm : 460...520 TORQUE CONTROL Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 8.65...8.75 2nd speed rpm : 500 Rack travel in m: 8.65...8.85 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 40.0...43.0 1000 s: (37.5...45.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 7.70 Speed rpm : 1240...1245 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm : 15.40...15.80 Remarks:

CHECKING INTERMEDIATE CONTROL CURVE

- Control-lever position 30°,n = 1000 1/min.,control-rod travel=9.5...10.2 mm

(CUNTROL-LEVER POSITION)

APPLICATION

Combine-harvester

Rack travel in mm : 9.00...12.00 BOSCH INJ. PUMP TEST SPECIFICATIONS : 1-5-3-6-2-4 Firing order Note remarks Test sheet : MB : 1.12.93 Edition Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 400 876 419 BASIC SETTING Injection pump rpm: 1200 1st speed Pump designation : PES6A95D41URS2844 EP type number : 0 410 896 893 Rack travel in mm : 9.45...9.55 Governor Governor design. : RSV350...1200A1c1154 Del.quantity cm3/: 6.1...6.3 -3L : 0 420 232 597 Governer no. 100 s: (5.9...6.5) Customer—spec. information cm3 : 0.3Spread : MERCEDES-BENZ Customer 100 s: (0.6) Engine : OM 366 rpm : 350.02nd speed Rack travel in mm : 6.1...6.3 1st version kW : 81.0 Del.quantity cm3/: 0.8...1.4 Rated speed : 2400 100 s: (0.5...1.6) TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil : 38...42 inlet temp. °C GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 : 1 419 992 198 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Inlet press., bar: 1.50 Governor spring pre-tension Test nozzle holder Click setting  $\bar{x}$ : 5.00 : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Opening pressure, bar : 172...175 1st version Speed rpm : 1200 : 61.0...63.0 Del.quantity Test lines : 1 680 750 015 1000 : (59.0...65.0) : 3.50 Spread cm3 Outside diameter 1000 : (6.00)x Wall thickness x Length mm : 6.00x1.50x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Control lever Set equal delivery quant. position degrees: 108...116 per values Testing: BEJINNING OF DELIVERY 1st rack travel in: 8.50 Test pressure, bar: 25...27 rpm : 1240...1245 Speed

2nd rack travel in: 4.00

3rd rack travel in: 4.00

rpm : 1263...1280

Prestroke mm

: 3.20...3.30

: (3.15...3.35)

rpm : 1300...1330 Speed 4th rack travel in: 1400 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: -3 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.2 Testina: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 350 Speed Rack travel in mm : 6.10...6.30 Rack travel in mm : 2.00 Speed rpm : 480...540 TORQUE CONTROL Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 9.45...9.55 rpm : 500 2nd speed Rack travel in m: 9.85...10.00 3rd speed rpm : 850 Rack travel in m: 9.55...9.85 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 500 rpm Del.quantity cm3/: 51.0.. 53.0 1000 s: (48.5...56.5) Speed rpm : 850 Del.quantity cm3/: 60.5...63.5 1000 s: (58.0...66.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.50 Speed rpm : 1240...1245 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 80.0...90.0 1000 s: (77.0...93.0) Rack travel in mm : 15.50...15.90 Remarks:

Combine-harvester

G19

**APPLICATION** 

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL Edition : 1.12.93

Replaces Test oil

: ISO-4113

Combination no. : 0 400 876 421

Injection pump

Pump designation : PES6A95D41DRS2848 EP type number : 0 410 896 892

Governor

Governor design. : RSV500...1100A5C2269

: 0 420 233 338 Governer no.

Customer-spec. information Customer : VALMET

: 634 DS Enaine

1st version kW : 140.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Openina** 

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEJINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 13.2...13.4

100 s: (13.0...13.6)

cm3 : 0.3Spread

100 s: (0.8)

2nd speed rpm : 500.0

Rack travel in mm : 4.20...4.40 Del.quantity cm3/: 1.8...2.4

100 s: (1.6...2.5)

Spread cm3 : 0.5100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 132.0...134.0

1000 : (130.0...136.0)

: 3.50 Spread cm3

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 13.00

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1210...1240

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 70...78

Setting point w/out bumper spring

Speed rpm : 500 Rack travel in mm : 4.3

Testina:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 500

Rack travel in mm : 4.20...4.40

Rack travel in mm : 2.00

Speed rpm : 500...560

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 14.00...14.10

2nd speed rpm : 700

Rack travel in m: 14.50...14.70

3rd speed rpm : 975

Rack travel in m: 14,20...14.40

Aneroid/Altitude

Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 900

Rack travel mm : 14.20...14.40

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 13.05...13.15

2nd pressure hPa : 655

Rack travel in m: 13.85...13.95

3rd pressure hPa : 550

Rack travel in m: 13.10...13.30

FULL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm: 700

Del.quantity cm3/: 135.0...139.0

1000 s: (133.0...141.0)

Aneroid pressure h: 😁

Speed rpm: 500

Del.quantity cm3/: 102.0...104.0

1000 s: (100.0...106.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 197.5...212.5

1000 s: (195.0...215.0)

Rack travel in mm : 19.50...21.00

Remarks:

**APPLICATION** 

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN

Edition : 13.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 097

Injection pump

Pump designation: PE12P110A520LS839-1

EP type number : 0 411 810 043

Governor

Governor design. : RQV250...1150PA668R

Governer no. : 0 421 813 379

Customer-spec, information Customer : MAN

Engine : D2542 MTE

1st version kW : 343.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

Phasina : 0-45-60-105-120-165-

180-225-240-285-300-

345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 14.2...14.5

100 s: (13.9...14.7)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.02nd speed Rack travel in mm : 6.8...7.0 Del.quantity cm3/: 1.3...1.98

100 s: (1.0...2.0)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.20...1.30 2nd speed rpm : 500

travel mm : 3.20...3.70

3rd speed rpm : 900

: 6.30...6.50 travel mm

rpm : 1150 4th speed

: 8.20...8.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1170 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 142.0...145.0

1000 : (139.5...147.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version Control lever

position degrees: 62...70

Testing:

1st rack travel in: 10.90

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

Speed rpm : 1310...1340 4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 7...15

Testing:

Speed rpm : 100 Minimum rack trave: 7.50 : 250 Sceed rpm

Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00

Speed : 470...530 rpm

START CUT-OUT

Speed 1/min: 170 (190)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1190...1200

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD 19,2 a Edition : 01.12.93 Replaces : 03.87 Test oil : ISO-4113

Combination no. : 0 401 840 734

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1075PA746

Governer no. : 0 421 813 477

Customer-spec. information Customer : KHD

Engine : BF12L513

1st version kW : 333.0 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 4- 9- 8- 5- 2-Firing order

Phasing

: 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1075

Rack travel in mm : 11.35...11.45

Del.quantity cm3/: 13.1...13.5

100 s: (12.9...13.7)

Spread cm3 : 0.5

100 s: (0.8)

2nd speed rpm : 300.0Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

cm3 : 0.7Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed : 1.30...1.40 travel mm

2nd speed : 380 rom

travel mm : 2.30...2.70

3rd speed rpm : 430

: 2.80...3.30 travel mm

4th speed rpm : 700

: 5.30...5.60 travel mm

rpm : 11205th speed

: 8.40...8.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1120 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1075 Speed

Aneroid pressure h: 900 Del.quantity : 131.0...135.0

1000 : (129.0...137.0)

Spread cm3 : 5.00

1000 : (8.00)

1st version Control lever

position degrees: 50...58

Testina:

1st rack travel in: 10.40

rpm : 1115...1125 Speed

2nd rack travel in: 4.00

rpm : 1215...1245 Speed

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 15...23

Testing:

Speed rpm : 100 Minimum rack trave: 8.10 rpm : 300

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rpm : 315...465 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed מוסח : 450 Pressure hPa : 900

Rack travel mm : 11.35...11.45

Measurement

1/min: 450 Speed

1st pressure hPa : -

Rack travel in m: 10.45...10.55

2nd pressure hPa : 500

Rack travel in m: 11.15...11.25

3rd pressure hPa : 430

Rack travel in m: 11.60...11.80

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 450

RATED SPEED

Del.quantity cm3/ : 108.0...112.0

1000 s: (105.0...115.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40

rpm : 1115...1125 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...165.0

1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

525

#### Note remarks

: KHD 19,2 a1 Test sheet : 01.12.93 Edition Replaces : 09.86 Test oil : ISO-4113

Combination no. : 0 401 840 754

Injection pump

Pump designation: PE12P110A920LS3173 : 0 411 810 708 EP type number

Governor

Governor design. : RQV300...1150PA820

Governer no. : 0 421 813 561

Customer-spec. information Customer : KHD

Engine : BF12L513C

1st version kW : 386.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening .

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 : 1- 4- 9- 8- 5- 2-Firing order

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - ° ; 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1150

Rack travel in mm : 12.45...12.55

Del.quantity cm3/: 15.6...15.8

100 s: (15.3...16.1)

Spread cm3 : 0.5

100 s: (0.8)

rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

cm3 : 0.7Spread 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 : 1.20...1.40 travel mm

rpm : 380 2nd speed

: 2.30...2.60 travel mm

3rd speed rpm : 800

: 5.20...5.50 travel mm

4th speed rpm : 1200

: 8.50...8.70 travel mm

rpm : 1280 5th speed

: 9.30...9.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Aneroid pressure h: 750

Del.quantity : 130.0...161.0)

cm3 : 5.00Spread 1000 : (8.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testina:

1st rack travel in: 11.40 Speed rpm : 1190...1200

2nd rack travel in: 4.00

rpm : 1290...1320 Speed

4th rack travel in: 1400

Speed rpm : 0.00...1,00

LOW IDLE 1

Control lever

position degrees: 81...89

Testing:

Speed rpm : 100 Minimum rack trave: 8.10 rpm : 300

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 300...450 Speed

Aneroid/Altitude Compensator Test

1st version Setting

rom : 450 Speed hPa : 750 Pressure

: 12.40...12.60 Rack travel mm

Measurement

 $1/\min : 450$ Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 430

Rack travel in m: 12.00...12.10 3rd pressure hPa : 280

Rack travel in m: 11.05...11.25

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 450 Speed

Del.quantity cm3/ : 108.0...112.0

1000 s: (105.0...115.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0 1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting

:

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

G27

#### Note remarks

Test sheet : KHD 19,2 a2 Edition : 1.12.93 Replaces : 26.12.88 Test oil : ISO-4113

Combination no. : 0 401 840 765

Injection pump

Pump designation : PE12P110A920LS3173 : 0 411 810 708

EP type number

Governor

Governor design. : RQV300...1000PA907

Governer no.

: 0 421 813 729

Customer-spec. information Customer : KHD

Engine : BF12L513C

1st version kW : 315.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom : 1000

Rack travel in mm : 11.65...11.75

Del.quantity cm3/: 14.1...14.3

100 s: (13.8...14.6)

Spread cm3 : 0.5

100 s: (0.8)

2nd speed rpm : 300.0Rack travel in mm: 6.6...6.8 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2) Spread cm3 : 0.7

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.60...1.90 2nd speed rom : 450

travel mm : 3.00...3.40 3rd speed rom : 750

travel mm : 5.20...5.60

rpm : 1050 4th speed

travel mm : 7.90...8.10

5th speed : 1120 rpm

travel mm : 9.50...9.90

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 141.0...143.0

1000 : (138.0...146.0)

Spread

cm3: 5.00

1000 : (8.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 10.70 Speed rpm : 1040...1050 2nd rack travel in: 4.00

rpm : 1105...1135 Speed

4th rack travel in: 1250

rpm : 0.90...1.00Speed

LOW IDLE 1 Control lever

position degrees: 85...93

Testing:

Speed rpm : 100 Minimum rack trave: 8.10 rpm : 300

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rpm : 334...532

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 11.65...11.75

: 700 2nd speed rpm

Rack travel in m: 11.95...12.05

: 900 3rd speed rpm

Rack travel in m: 11.70...11.90

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/: 148.0...152.0

1000 s: (146.0...154.0)

**BREAKAWAY** 

1st version

1m., rack travel less than

full load rack tr: 10.70

Speed

rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...165.0

1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

H01

#### Note remarks

Test sheet : KHD 19,2 a4
Edition : 01.12.93
Replaces : 09.06.89
Test oil : ISO-4113

Combination no. : 0 401 840 766

Injection pump

Pump designation : PE12P110A920LS3173 EP type number : 0 411 810 708

Governor

Governor design. : RQV475...1075PA907-1

Governer no. : 0 421 813 739

Customer—spec. information Customer : KHD

Engine : BF12L513C

1st version kW : 333.0 Rated speed : 2150

### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

 $\times$  Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

## BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2-

Phasing

: 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

#### BASIC SETTING

1st speed rpm: 1075

Rack travel in mm : 11.25...11.35

Del.quantity cm3/: 13.2...13.4

100 s: (13.0...13.6)

Spread cm3 : 0.5

100 s: (0.8)

2nd speed rpm : 475.0 Rack travel in mm : 6.4...6.6 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.5)

Spread cm3 : 0.7 100 s: (1.0)

# (B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 475 travel mm : 1.10..

travel mm : 1.10...1.50 2nd speed rpm : 650

travel mm : 3.40...4.00 3rd speed rpm : 950

3rd speed rpm : 950 travel mm : 5.60...6.20

4th speed rpm : 1100

travel mm : 7.70...7.90

GUIDE SLEEVE PÓSITION Control-lever position

Degree: -1

Speed rpm: 1120

Rack travel in mm : 15.20...17.80

#### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1075

Del.quantity : 132.0...134.0 1000 : (130.0...136.0) Spread

cm3 : 5.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 115...123

Testing:

1st rack travel in: 10.30

rpm : 1095...1105 Speed

2nd rack travel in: 4.00

Speed rpm : 1135...1165 4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 85...93

Testing:

rpm : 100 Speed

Minimum rack trave: 8.20 rpm : 475

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 475...640 Speed

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1075

Rack travel in m: 11.25...11.35

rpm : 800 2nd speed

Rack travel in m: 11.60...11.80

3rd speed rpm : 1000

Rack travel in m: 11.40...11.60

START CUT-OUT

1/min: 395 (415) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm3/ : 141.0...145.0

1000 s: (139.0...147.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.30

rpm : 1095...1105 Speed

H03

#### STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...165.0

1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN Edition : 13.12.93 Replaces Test oil : ISO-4113 Combination no. : 0 401 840 774 Injection pump Pump designation : PE12P120A520/4LS3861 EP type number : 0 411 820 729 Governor : RQV300...900PA668-9 Governor design. : 0 421 814 051 Governer no. Customer—spec. information Customer : MAN Engine : D2842LE 1st version kW : 440.0 Rated speed : 1800 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 089 Outside diameter x Wall thickness × Length mm : 8.00x2.50x600 (A) Injection pump setting values

Insp. /alues in parentheses Set equal delivery quant. per values \_\_\_\_ BEGINNING OF DELIVERY Test pressure, bar: 25...27 H<sub>04</sub>

: 4.20...4.30 Prestroke mm : (4.15...4.35) Rack travel in mm : 9.00...12.00 : 12- 1- 5- 9- 8- 3-Firing order 4- 11- 10- 2- 6- 7 Phasing : 0-45-60-105-120-165-180-225-240-285-300-Phasina : 345 Tolerance + - ° : 0.30 (0.75) Time to cyl, no. : 12 BASIC SETTING 1st speed rpm: 900 Rack travel in mm : 11.00...11.10 Del.quantity cm3/: 21.5...21.7 100 s: (21.2...22.0) Spread cm3 : 0.6100 s: (1.1) rpm : 250.0 2nd speed Rack travel in mm: 4.8...5.2 Del.quantity cm3/: 1.8...2.4 100 s: (1.5...2.7) Spread cm3 : 0.9100 s: (1.3) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 travel mm : 0.96...1.16 2nd speed : 440 rom : 3.24...3.64 travel mm 3rd speed rpm : 490 travel mm : 3.83...4.23 4th speed rpm : 710 : 5.39...5.79 travel mm rpm : 970 5th speed : 8.36...8.56 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1000 Speed Rack travel in mm : 8.70...11.30 FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 : 215.0...217.0 Del.quantity 1000 : (212.0...220.0) cm3 : 6.50 Spread 1000 : (11.0) RATED SPEED 1st version Control lever position degrees: 116...124 Testina: 1st rack travel in: 10.00 rpm : 940...950 2nd rack travel in: 4.00 Speed rpm : 1005...11035 4th rack travel in: 1200 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 62...70 Testing: Speed : 150 rpm Minimum rack trave: 6.00 rpm : 250 Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 Speed rpm : 310...430 START CUT-OUT 1/min: 200 (220) Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 940...950 Speed STARTING FUEL DELIVERY Speed COM : 100 Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) LOW IDLE rpm : 250 Rauk travel in mm : 6.90...7.10

Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00 1000 s: (12.00) Remarks:

: MAN-NR. 3-7252

H05

Spread

Note remarks

Test sheet : KHD Edition : 2.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 775

Injection pump

Pump designation : PE12P110A920LS3173 : 0 411 810 708

EP type number

Governor

Governor design. : RQV300...900PA1089

: 0 421 814 065 Governer no.

Customer spec. information Customer : KHD

Engine : BF12L513C

: 304.0 1st version kW Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5-

Phasina : 0-15-60-75-120-135-180-195-240-255-300-

315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.20...11.30

Del.guantity cm3/: 12.8...13.0

100 s: (12.5...13.3)

Spread cm3 : 0.5

100 s: (0.8)

rpm : 300.02nd speed Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2) Spread cm3 : 0.7

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.06...1.46 travel mm

2nd speed rpm : 396 travel mm : 2.29...2.79

: 520 3rd speed rpm

: 3.21...3.71 travel mm

rpm : 774 4th speed

: 5.92...6.42 travel mm

rpm : 959 5th speed

: 8.62...8.92 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1000 Speed

Rack travel in mm : 8.70...11.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

: 128.0...130.0 Del.quantity

1000 : (125.0...133.0)

Spread

cm3 : 5.00 1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Testing:

1st rack travel in: 10.20 Speed rpm : 940...950 2nd rack travel in: 4.00

Speed rpm : 990...1020

4th rack travel in: 1100

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 84...92

Testing:

Speed rpm : 200 Minimum rack trave: 9.50 Speed rpm : 300

Rack travel in mm : 6.70...6.90

CONSTANT REGULATION

Speed rpm : 300...400

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 11.20...11.30

2nd speed rpm : 600

Rack travel in m: 11.20...11.30

START CUT-OUT

Speed 1/min: 220 (240)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.20 Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100

De..quantity cm3/: 140.0...160.0

1000 s: (135.0...165.0)

Remarks:

On activation of the starting solenoid, the start position must be reached.

H07

BOSCH INJ. PUMP TEST SPECIFICATIONS Phasina : 0-60-120-180-240-300 Note remarks Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ Test sheet : VOL 10,0q20 : 02.12.93 : 03.07.92 Edition Time to cyl. no. : 1 Replaces Test oil : ISO-4113 BASIC SETTING Combination no. : 0 401 846 760 1st speed rpm: 700 Injection pump Rack travel in mm : 12.30...12.40 Pump designation : PE6P110A320RS3108X EP type number : 0 411 816 730 Del.quantity cm3/: 16.5...16.7 Governor Governor design. : RQV250...1100PA920-2 100 s: (16.2...17.0) Governer no. : 0 421 813 779 Spread cm3 : 0.4Customer-spec. information Customer : VOLVO 100 s: (0.7) : THD100ED101KB KF Engine 2nd speed rpm : 250.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 3.0...3.4 100 s: (2.7...3.6) TEST BENCH REQUIREMENTS Test oil Spread cm3 : 0.3inlet temp. °C : 38...42 100 s: (0.6) Overflow valve (B) Setting of injection pump : 1 417 413 925 with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL rpm : 250 1st speed Test nozzle holder : 1.10...1.30 travel mm assembly : 0 681 343 009 rpm : 500 2nd speed : 4.20...4.80 travel mm Openina rpm : 700 3rd speed pressure, bar : 172...175 travel mm : 6.30...6.70 rpm : 950 4th speed : 6.30...6.70 travel mm Test lines : 1 680 750 089 rpm : 1100 5th speed : 7.00...7.50 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 8.00x2.50x600 Control-lever position Degree: -1 rpm : 1175 (A) Injection pump setting values Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 9.00...12.00 Firing order : 1-5- 3- 6- 2- 4 Spread cm3 : 4.00 1000 : (7.50)

1000

Aneroid pressure h: 900

rpm : 700

: 165.0...167.0

: (162.0...170.0)

RATED SPEED

Del.quantity

Speed

1st version Control lever

position degrees: 112...120

Testina:

1st rack travel in: 11.35

rpm : 1160...1170 Speed

2nd rack travel in: 4.00

rpm : 1225...1255 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 60...68

Testina:

: 100 Speed rpm Minimum rack trave: 6.70 rpm : 250

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rom : 260...420

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 900

: 12.30...12.40 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.30...9.40

2nd pressure hPa : 290

Rack travel in m: 9.55...9.65

3rd pressure hPa : 710

Rack travel in m: 11.75...11.95

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 106.0...108.0

1000 s: (103.0...111.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.35

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 170.0...200.0 1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 30.0...34.0

1000 s: (27.5...36.5)

cm3 : 3.00 Spread

1000 s: (6.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

**APPLICATION** 

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.80...2.90 : (2.75...2.95) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : VOL 12,2 d1 Edition : 27.09.93 Replaces : 11.91 Test oil : ISO-4113 Phasing : 9-60-120-180-240-300 Combination no. : 0 401 846 901 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation: PE6P12OA32ORS3240-1 EP type number : 0 411 826 787 BASIC SETTING Governor Governor design. : RQV250...950PA921-17 1st speed rpm: 700 Governer no. : 0 421 813 800 Rack travel in mm : 12.70...12.80 Customer-spec, information Customer : VOLVO-TRUCK Del.quantity cm3/: 22.3...22.5 Engine : TD 122 FH 100 s: (22.0...22.8) : 269.0 1st version kW cm3 : 0.5Spread : 1900 2nd version kW 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.02nd speed Test oil Rack travel in mm: 6.5...6.7 inlut temp. °C : 38...42 Del.quantity cm3/: 1.7...2.2 100 s: (1.5...2.5) Overflow valve Spread cm3 : 0.5: 1 457 413 010 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 250 Openina travel mm : 1.00...1.40 : 207...210 pressure, bar 2nd speed rpm : 450 : 3.60...4.20 travel mm Orifice plate 3rd speed rpm : 700 diameter mm : 0,8 : 6.30...6.70 travel mm 4th speed rpm : 985 : 8.10...8.30 travel mm Test lines : 1 680 750 067 5th speed rpm : 1060 : 9.40...9.80 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00X1.50X1000 Control-lever position Degree: -1 rpm : 1030 (A) Injection pump setting values Speed

Rack travel in mm: 15.20...17.80

Insp. /alues in parentheses

Del.quantity : 223.0...228.0)

cm3 : 5.00 Spread

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 116...124

Testina:

1st rack travel in: 11.70 Speed rpm : 990...1000 2nd rack travel in: 4.00

rpm : 1050...1080 Speed

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 60...68

Testing:

rpm : 100 Speed Minimum rack trave: 8.10 Speed rpm : 250

Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

rpm : 250...380 Speed

Aneroid/Altitude Compensator Test

1st version Settina

Speed rom : 500 Pressure hPa : 900

Rack travel mm : 12.70...12.80

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 90

Rack travel in m: 10.10...10.20

3rd pressure hPa : 470

Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1s. version

Aneroid pressure h: -: 700 Speed rpm

Del.quantity cm3/: 154.0...156.0

1000 s: (151.0...159.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.70

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 270.0...310.0

1000 s: (266.0...314.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 17.5...22.5 1000 s: (15.0...25.0)

Spread cm3 : 5.00 1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Start-of-delivery setting with ROBO

diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.50...3.60 Prestroke mm : (3.45...3.65) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : VOL 10,2 a Edition : 2.12.93 Replaces : 24.07.92 Test cil : ISO-4113 Phasing : 0-60-120-180-240-300 : 0 401 846 935 Combination no. Tolerance  $+ - \circ : 0.50 (0.75)$ Injection bump Time to cyl. no. : 1 Pump designation : PE6P120A320RS3262 EP type number : 0 411 826 797 BASIC SETTING Governor : RQV300...1050PA232-4 Governor design. 1st speed rpm: 700 Governer no. : 0 421 813 883 Rack travel in mm : 9.40...9.50 Sustomer-spec, information Customer : VOLVO Del.quantity cm3/: 17.4...17.6 Engine : TD102 GC 100 s: (17.1...17.9) 1st version RW : 180.0 Spread cm3 : 0.5Rated speed : 2100 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 3.2...3.7 Test oil inlet temp. °C : 38...42 100 s: (2.9...3.9) Overflow valve Spread cm3 : 0.5: 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 019 GUIDE SLEEVE TRAVEL 1st speed rpm : 300 Opening. travel mm : 1.30...1.70 : 207...210 pressure, bar 2nd speed 500 rpm : : 2.70...3.30 travel mm Orifice plate 3rd speed rpm : 800 diameter mm : 0,8 travel mm : 4.80...5.50 4th speed rpm : 1100 travel mm : 7.60...7.80 Test Lines : 1 680 750 075 rpm : 1180 5th speed : 8.80...9.20 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 8.00x2.50x1000 x Length mm Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1150 Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values \_\_\_\_ FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version

Speed

rpm : 700

Aneroid pressure h: 900

Test pressure, bar: 25...27

Del.quantity : 174.0...176.0

1000 : (171.0...179.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 108...116

Testing:

1st rack travel in: 8.40

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 80...88

Testing:

: 100 Speed mom Minimum rack trave: 6.90 : 300 rom

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 300...410 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rom : 500 Pressure hPa : 900

Rack travel mm : 9.40...9.50

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 170

Rack travel in m: 9.40...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Spled

Del.quantity cm3/: 171.0...173.0

1000 s: (168.0...176.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity\_cm3/ : 160.0...190.0

1000 s: (156.0...194.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300 Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 32.0...37.0 1000 s: (29.5...39.5)

cm3 : 5.00Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.45...2.55 Prestroke mm : (2.40...2.60) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : VOL 5,9 b : 02.12.93 Test sheet Edition Replaces : 18.12.92 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 401 846 937 Tolerance + - ° : 0.30 (0.75)Injection pump Time to cyl. no. : 1 Pump designation : PE6P11DA32DRS3266 EP type number : 0 411 816 777 BASIC SETTING Governor Governor design. : RQV300...1300PA996K rpm : 780 1st speed Governer no. : 0 421 815 277 Rack travel in mm : 11.70...11.80 Customer-spec. information Del.quantity cm3/: 13.5...13.7 Customer : VOLVO-TRUCK Engine : TD63ES 100 s: (13.3...13.9) 1st version kW : 155.0 Spread cm3 : 0.5Rated speed : 2600 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 330.0 2nd speed Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 1.7...2.1 Test oil inlet temp. °C : 38...42 100 s: (1.4...2.4) Overflow valve Spread cm3 : 0.7: 1 457 413 010 100 s: (1.1) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 assembly GUIDE SLEEVE TRAVEL rpm : 330 1st speed Openina : 1.30...1.70 travel mm pressure, bar : 207...210 2nd speed rpm : 460 travel mm : 2.85...3.35 Orifice plate 3rd speed rpm : 610 diameter mm : 0,6 : 3.35...3.84 travel mm rpm : 1000 4th speed : 5.43...5.930 travel mm Test lines : 1 680 750 008 5th speed rpm: 1374 travel mm : 9.88...10.08 Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00X2.00X600 Control-lever position Degree: -1 (A) Injection pump setting values Speed rpm : 1470 Insp. values in parentheses Rack travel in mm : 6.00...12.00 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version

Speed

rpm : 780

Aneroid pressure h: 1200

Test pressure, bar: 25...27

Del.quantity : 135.0...139.0)

cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 114...122

Testina:

1st rack travel in: 11.20

rpm : 1360...1370 Speed

2nd rack travel in: 4.00

กรัก : 1430...1460 Speed

4th rack travel in: 1520

Speed rom : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 70...78

Testina:

Speed : 230 rpm Minimum rack trave: 6.30 Speed : 330 rom

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 355...545

TORQUE CONTROL

Dimension a mm : 0.25

Torque control curve - 1st version

1st speed rpm : 780

Rack travel in m: 11.70...11.80

2nd speed rpm : 1300

Rack travel in m: 11.90...12.10

Aneroid/Altitude Compensator Test

1st version Settina

Speed : 1300 man. Pressure hPa : 1200

Rack travel mm : 11.90...12.10

Measurement

1/min: 1300 Speed

1st pressure hPa : -

Rack travel in m: 8.50...8.70

2nJ pressure hPa : 95

Rack travel in m: 8.80...8.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 1300 Speed Del.quantity cm3/: 128.0...130.0

1000 s: (124.0...134.0)

Spread cm3 : 8.00

10000 s: (12.0)

Aneroid pressure h: -Speed

rpm : 780 Del.quantity cm3/: 73.0...75.0

1000 s: (70.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

rpm : 1360...1370 Speed

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 65.0...85.0

1000 s: (61.0...89.0)

Rack travel in mm : 8.50...8.70

LOW IDLE

rpm : 330 Speed

Rack travel in mm : 5.40...5.60

Del.quantity cm3/: 17.0...21.0 1000 s: (14.0...24.0)

Spread cm3 : 7.00

1000 s: (11.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA Edition : 2.11.93 Replaces : 21.09.92

Test oii : ISO-4113

Combination no. : 0 401 846 950

Injection pump

Pump designation : PE6P110A720RS3289 EP type number : 0 411 816 781

Governor

Governor design. : RQV200...1100PA555-5

Governer no. : 0 421 813 943

Customer—spec. information Customer : SCANIA

Engine : DS11 63A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 104

**Opening** 

pressure, bar : 250...253

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Teut pressure, bar: 25...27

Prestroke mm : 3.30...3.40

: (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm: 12.30...12.40

Del.quantity cm3/: 17.1...17.3

100 s: (16.9...17.5)

Spread cm3: 0.6

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm : 6.5...6.7

Del.quantity cm3/: 1.9...2.5 100 s: (1.6...2.8)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.70...1.10 2nd speed rpm : 350

travel mm : 2.00...2.60

3rd speed rpm : 650

travel mm : 4.90...5.50 4th speed rpm : 1145

travel mm : 8.30...8.50

5th speed rpm: 1300

travel mm : 9.70...10.10

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1500

Del.quantity : 171.0...173.0

1000 : (168.0...176.0)

: 8.00 Spread cm3

1000 : (12.0)

RATED SPEED

1st version Control Lever

position degrees: 112...120

Testina:

1st rack travel in: 11.30

Speed rpm : 1140...1150

2nd rack travel in: 4.00

rpm : 1280...1310 Speed

4th rack travel in: 1420

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 65...73

Testina:

Speed rpm : 100 Minimum rack trave: 8.20 : 325 Speed rpm

Rack travel in mm: 6.50...6.70

Rack travel in mm : 2.00 Speed rom : 400...460

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed rom hPa : 1500 Pressure

: 12.30...12.40 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10,20

2nd pressure hPa : 200

Rack travel in m: 11.70...11.80

3rd pressure hPa : 140

Rack travel in m: 10.65...10.95

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 1100 Del.quantity cm3/: 160.0...168.0 1000 s: (158.0...170.0)

Arieroid pressure h: -Speed COM : 500 Del.quantity\_cm3/ : 112.0...116.0

1000 s: (110.0...118.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 240.0...290.0 Rack travel in mm : 20.00...21.00

LOW IDLE

Speed : 325 rom

Rack travel in mm : 6.50...6.70

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO diaphragm.

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA : 2.12.93 Edition Replaces : 30.10.92 : ISO-4113 Test oil

Combination no. : 0 401 846 955

Injection pump

Pump designation : PE6P120A320RS3196 EP type number : 0 411 826 763

Governor

Governor design. : RQ200/1100PA998 Governer no. : 0 421 801 614

Customer-spec. information Custome: : SCANIA

Engine : DSC9 10

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 104

Opening

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Teut pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rcm: 700

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 13.2...13.4

100 s: (12.9...13.7)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 250.0 Rack travel in mm: 4.4...5.0 Del.quantity cm3/ : 1.4...1.8

100 s: (-) cm3 : 0.4Spread

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

travel mm : 0.90...1.30 2nd speed rpm : 350

: 2.30...2.90 travel mm

3rd speed rpm : 650

: 3.70...4.30 travel mm

rpm : 1180 4th speed

: 4.35...4.65 travel mm

: 1280 5th speed rpm

travel mm : 5.50...6.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed rpm : 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 132.0...137.0)

H18

cm3 : 8.00Spread

1000 : (12.00)

RATED SPEED

1st version

Setting point:

Speed rom Rack travel in mm: 16.5

Testing:

1st rack travel in: 9.50

rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1265...1295 4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Rack travel in mm: 4.7

Testing:

rpm : 150 Speed Minimum rack trave: 6.20 rpm : 250

Rack travel in mm : 4.60...4.80 Rack travel in mm : 2.00

rpm : 320...380 Speed

Aneroid/Altitude Compensator Test

1st version Settina

Speed rpm : 500 hPa : 900 Pressure

Rack travel mm : 10.50...10.60

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.20 2nd pressure hPa : 350

Rack travel in m: 10,30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Spled rpm : 1100

Del.quantity cm3/: 128.0...136.0

1000 s: (126.0...138.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 115.0...117.0

1000 s: (112.0...120.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 9.80...10.20

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Two-part control lever.

**APPLICATION** 

0mnibus

H19

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA Edition : 2.12.93

Replaces : 26.02.93 Test oil : ISO-4113

Combination no. : 0 401 846 956

Injection pump

Pump designation: PE6P120A320RS3196 EP type number : 0 411 826 763

Governor

Governor design. : RQV200...1100PA729-4

: 0 421 813 950 Governer no.

Customer-spec. information Customer : SCANTA

Engine : DSC9 10

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 2.30

Test nozzle holder

assembly : 1 688 901 104

Openina

: 250...253 pressure, bar

Orifice plate

diameter mm : 0.7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm : 700 1st speed

Rack travel in mm: 10.50...10.60

Del.quantity cm3/: 13.2...13.4

100 s: (12.9...13.7)

Spread cm3 : 0.8

100 s: (1.2)

rpm : 250.02nd speed Rack travel in mm: 4.4...5.0

Del.quantity cm3/: 1.3...1.9 100 s: (-)

Spread cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.70...1.10

rpm : 350 2nd speed travel mm

: 2.00...2.60 3rd speed rpm : 650

travel mm

: 4.90...5.50

rpm : 1145 4th speed

: 8.30...8.50 travel mm

rpm : 1250 5th speed

travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1120 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 132.0...137.0)

Spread cm3 : 8.00

1000 : (12.00)

#### RATED SPEED

1st version Control lever

position degrees: 112...120

Testina:

1st rack travel in: 9.50

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1235...1265 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 56...66

Testina:

Speed rpm : 150 Minimum rack trave: 5.80 rpm : 250

Rack travel in mm : 4.60...4.80

Rack travel in mm: 2.00 : 320...380 Speed rpm

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rom hPa : 900 Pressure

: 10.50...10.60 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.20 2nd pressure hPa : 350

Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 1100 Speed rpm

Del.quantity cm3/: 128.0...136.0 1000 s: (126.0...138.0)

Android pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 115.0...117.0

1000 s: (112.0...120.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.50

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 110.0...130.0

1000 s: (106.0,...134.0)

Rack travel in mm : 9.80...10.20

LOW IDLE

: 250 Speed rom

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROED diaphragm.

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,2 c
Edition : 02.12.93
Replaces : 18.12.92
Test oil : ISO-4113

Combination no. : 0 401 846 960

Injection pump

Pump designation : PE6P110A320RS3265 EP type number : 0 411 816 778

Governor

Governor design. : RQV300...1100PA1019K

Governer no. : 0 421 815 290

Customer-spec. information Customer : VME

Engine : TD102KTE

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 14.60...14.70

Del.quantity cm3/: 19.2...19.4

100 s: (19.0...19.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 2.5...2.9

100 s: (2.3...3.1)

Spread cm3 : 0.3 100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.90...1.40

2nd speed rpm : 406 travel mm : 2.32

travel mm : 2.32...2.82

3rd speed rpm : 590 travel mm : 3.97...4.47

4th speed rpm : 1080

travel mm : 7.65...8.15

5th speed rpm : 1156

travel mm : 8.83...9.33

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm: 1260

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1500

Del.quantity : 192.0...194.0 1000 : (190.0...196.0)

cm3 : 4.00

1000 : (7.50)

RATED SPEED

Spread

1st version Control lever position degrees: 113...121 Testing: 1st rack travel in: 13.65 Speed rpm : 1160...1170 2nd rack travel in: 4.00 Speed rpm : 1250...1278 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 67...75 Testing: : 200 Speed rpm Minimum rack trave: 6.40 Speed : 300 rpm Rack travel in mm : 5.20...5.40 CONSTANT REGULATION Speed rpm : 300...460 TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 14.60...14.70 : 600 2nd speed rpm Rack travel in m: 13.90...14.10 3rd speed rpm : 720 Rack travel in m: 14.20...14.50 Aneroid/Altitude Compensator Test 1st version Setting : 1100 Speed rpm Pressure hPa : 1500 Rack travel mm : 14.60...14.70 Measurement Speed  $1/\min : 1100$ 1st pressure hPa :-Rack travel in m: 11.00...11.20 2nd pressure hPa : 90 Rack travel in m: 11.30...11.40 3rd pressure hPa : 400

Rack travel in m: 14.20...14.40

1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1500 Speed rpm : 600

Del.quantity cm3/: 188.0...192.0 1000 s: (186.0...194.0)

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/: 135.0...137.0

1000 s: (132.0...140.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 1160...1170

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 140.0...170.0

1000 s: (136.0...174.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed : 300 rpm

Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 25.0...29.0 1000 s: (23.0...31.0) Spread cm3 : 3.00

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

Speed

START CUT-OUT

Note remarks

Test sheet : DAF Edition : 2.12.93

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 971

Injection pump

Pump designation: PE6P110A320RS3302Z

EP type number : 0 411 816 789

Governor

Governor design. : RQ300/1000PA1012-1

Governer no.

: 0 421 801 648

Customer-spec. information

Customer : DAF

Engine : LS 195 M

1st version kW : 195.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test mozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. /alues in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80

: (3.65...3.85) Rack travel in mm : 14.00...15.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 3.90...4.10 & maximum rack tra: 13.5...14.5 Difference ° CS : 3.00...5.00

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 16.5...16.7

100 s: (16.2...16.9)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm: 7.9...8.1

Del.quantity cm3/ : 2.7...3.2 100 s: (2.5...3.5)

cm3 : 0.5Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 1000

Del.quantity : 165.0...167.0 1000 : (162.5...169.5)

: 4,00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 Testing: 1st rack travel in: 12.90 Speed rpm : 1045...1061 2nd rack travel in: 4.00 rpm : 1110...1140 Speed 4th rack travel in: 1250 Speed pm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.5 Testing: Speed : 200 rom Minimum rack trave: 11.00 Speed rpm: 300 Rack travel in mm: 6.40...6.60 Rack travel in mm: 2.00 Speed rpm : 340...380 Aneroid/Altitude Compensator Test

1st version Settina Speed rpm Pressure

hPa : 1000 Rack travel mm : 13,90...14.00

: 600

Measurement

1/min: 600 Speed

1st pressure hPa : 480

Rack travel in m: 13.50...13.60 2nd pressure hPa : 340

Rack travel in m: 12.50...12.70

3rd pressure hPa : -

Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: -Speed rpm : 600

Del.quantity cm3/: 125.0...127.0 1090 s: (122.5...129.5)

BREAKAWAY

1s. version 1mm rack travel less than

full load rack tr: 12.90

rpm : 1045...1061 Speed

H25

## STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 330.0...370.0 1000 s: (327.0...373.0) Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : STE Phasing : 0-60-120-180-240-300 Edition : 2.12.93 Replaces Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ Test oil : ISO-4113 Time to cyl. no. : 1 : 0 401 846 979 Combination no. BASIC SETTING Injection pump Pump designation: PE6P110A720RS3243 1st speed rpm: 1100 EP type number : 0 411 816 770 Governor Rack travel in nm: 12.70...12.80 Governor design. : RQV250...1100PA413-6 Governer no. : 0 421 813 898 Del.quantity cm3/: 16.4...16.6 Customer spec. information 100 s: (16.1...16.9) Customer : SNF cm3 : 0.4Spread Engine : WD615.63 100 s: (0.7) 1st version kW : 204.0 Rated speed : 2200 rpm : 250 2nd speed Rack travel in mm: 4.3...4.7 TEST BENCH REQUIREMENTS Del.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9) Test oil Spread cm3 : 0.3inlet temp. °C : 38...42 100 s: (0.6) Overflow valve (B) Setting of injection pump : 1 417 413 025 with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL rpm : 250 1st speed Test nozzle holder travel mm : 0.88...1.38 : 0 681 343 009 assembly 2nd speed rpm : 356 : 1.74...2.24 travel mm rpm : 510 Opening 1 3rd speed : 172...175 pressure, bar : 2.86...3.36 travel mm 4th speed rpm : 816 travel mm : 5.10...5.60 rpm : 1157 Test lines : 1 680 750 089 5th speed : 8.26...8.76 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 8.00x2.50x600 Control-lever position Degree: -1 Speed rpm : 1220 Rack travel in mm : 10.45...13.05 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_ FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100

Del.quantity : 104.u...169.0)

Aneroid pressure h: 1200

H26

BEGINNING OF DELIVERY

Prestroke mm

Teut pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 2.80...2.90

: (2.75...2.95)

cm3 : 4.00Spread

1000 : (7.50)

RATED SPEED

Control lever

position degrees: 106...114

Testina:

1st rack travel in: 11.70

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1240...1270 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 74...82

Testina:

Speed rpm : 100 Minimum rack trave: 6.00 Speed rpm : 250

Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

rpm : 250...350Speed

Aneroid/Altitude Compensator Test

1st version

Settina Speed

: 500 rpm hPa : 1200 Pressure

Rack travel mm : 12.70...12.80

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 500

Rack travel in m: 11.90...12.00

3rd pressure hPa : 325

Rack travel in m: 10.30...10.50

START CUT-OUT

Speed 1/min: 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rpm : 700

1st version

**BREAKAWAY** 

Speed

1st version

1mm rack travel less than

Aneroid pressure h: -

full load rack tr: 11.70

Speed rpm : 1140...1150

Del.quantity cm3/: 174.0...178.0

rpm : 500

Del.quaritity cm3/: 120.0...122.0

1000 s: (171.0...181.0)

1000 s: (117.0...125.0)

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 232.0...272.0 1000 s: (228.0...276.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 325

Rack travel in mm : 6.50...6.70

Remarks:

H27

Note remarks

Test sheet : STE Edition : 2.12.93 Replaces

Test oil

: ISO-4113

Combination no. : 0 401 846 980

Injection pump

Pump designation : PE6P110A720RS3243 EP type number : 0 411 816 770

Governor

Governor design. : RQ300/1100PA412-9

Governer no. : 0 421 801 696

Customer-spec. information Customer : SNF

Engine : WD615.42/43

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 15.4...15.6

100 s: (15.1...15.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300 Rack travel in mm : 3.2...3.8 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 900

: 154.0...156.0 : (151.0...159.0) Del.quantity

1000 cm3 : 4.00

Spread

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm: 16.0

Testina:

1st rack travel in: 11.80

rpm : 1157...1173 Speed

2nd rack travel in: 4.00

rpm : 1250...1280 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 3.50

Testing:

Speed rpm : 200

Minimum rack trave: 5.00

Speed rpm : 300 Rack travel in mm : 3.40...3.60 Rack travel in mm : 2.00 Speed rpm : 340...380

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rom : 500 Pressure hPa : 1200

: 12.75...12.85 Rack travel mm

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : -

Rack travel in m: 9.65...9.85

2nd pressure hPa : 310

Rack travel in m: 10.05...10.15

3rd pressure hPa : 580

Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 700

Del.quantity cm3/: 167.0...173.0

1000 s: (164.0...176.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 119.0...121.0 1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1157...1173 Speed

ST. RTING FUEL DELIVERY

Speed rom : 100 Del.quantity cm3/: 250.0...270.0

1000 s: (246.0...274.0)

Rack travel in mm: 17.50...18.50

LOW IDLE

Speed rpm : 325

Rack travel in mm : 6.50...6.70

Remarks:

Note remarks

Test sheet : STE Edition : 2,12,93

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 981

Injection pump

Pump designation : PE6P11DA72ORS3243 EP type number : 0 411 816 770

Governor

Governor design. : RQV250...1100PA413-7

: 0 421 814 073 Governer no.

Customer-spec. information Customer : SNF

Engine : WD615.42/43

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

**Opening** 

pressure, bar : 207...210

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.75...12.85

Del.quantity cm3/: 15.4...15.6

100 s: (15.1...15.9)

Spread cm3 : 0.4

100 s: (0.7)

rom : 250 2nd speed

Rack travel in mm : 3.2...3.8 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.3 Spread

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 0.93...1.33 travel mm : 356 2nd speed

man

: 1.74...2.24 travel mm

3rd speed rpm : 510

travel mm : 2.86...3.36

4th speed rpm : 824 travel mm : 5.16...5.66

: 1177 5th speed rpm

: 8.60...8.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1260

Rack travel in mm : 10.50...13.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 900

: 154.0...156.0 Del.quantity

1000 : (151.0...165.0)

: 4.00 cm3 Spread

1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 102...110

Testing:

1st rack travel in: 11.80

rpm : 1160...1170 Speed

2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 68...76

Testing:

Speed : 150 rpm Minimum rack trave: 5.50 rpm : 250 Speed

Rack travel in mm : 3.40...3.60

CONSTANT REGULATION

Speed rpm : 250...350

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 12.75...12.85

2nd speed rpm : 700

Rack travel in m: 12.70...12.90

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 mom. Pressure hPa : 900

Rack travel mm : 12.75...12.85

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 9.65...9.85

2nd pressure hPa : 310

Rack travel in m: 10.05...10.15 3rd pressure hPa : 580

Rack travel in m: 12.30...12.50

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 700 Del.quantity cm3/ : 167.0...173.0 1000 s: (164.0...176.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 119.0...121.0

1000 s: (116.0...124.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 250.0...270.0

1000 s: (246.0...274.0)

Rack travel in mm : 17.50...18.50

LOW IDLE

Speed : 325 rpm

Rack travel in mm : 6.50...6.70

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.70...3.80 Prestroke mm : (3.65...3.85) Rack travel in mm : 14.00...15.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : DAF Edition : 3.12.93 Replaces Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 401 846 982 Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ Injection pump BEGINNING OF DELIVERY DIFFERENCE Pump designation : PE6P110A320RS3302X : 0 411 816 794 EP type number betw. rack trav. m: 3.90...4.10 & maximum rack tra: 12.5...13.5 Difference ° CS : 3.00...5.00 Governor Governor design. : RQ300/1000PA1012-1 Governer no. : 0 421 801 648 BASIC SETTING Customer-spec. information Customer : DAF 1st speed rpm: 850 Engine : LS 160 M Rack travel in mm : 14.00...14.10 1st version kW : 160.0 Del.quantity cm3/: 14.4...14.6 Rated speed : 2000 100 s: (14.1...14.8) TEST BENCH REQUIREMENTS Spread cm3 : 0.4Test oil inlet temp. °C : 38...42 100 s: (0.7) Overflow valve 2nd speed rpm : 300.0 : 1 417 413 025 Rack travel in mm: 7.1...7.3 Del.quantity cm3/ : 2.7...3.2 100 s: (2.5...3.5) Inlet press., bar: 1.50 cm3 : 0.5 Spread Test nozzle holder 100 s: (0.8) assembly : 1 688 901 101 GUIDE SLEEVE POSITION Openina | Control-lever position : 207...210 pressure, bar Degree: -2 rpm : 600 Orifice plate Rack travel in mm : 19.20...20.80 diameter mm : 0.6 FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 089 1st version Speed rpm : 850 Outside diameter Aneroid pressure h: 1000 x Wall thickness Del.quantity : 144.0...146.0 1000 : (141.5...148.5) x Length mm : 8.00x2.50x600 : 4.00 Spread cm3 (A) Injection pump setting values 1000 : (7.50)

BEGINNING OF DELIVERY Test pressure, bar: 25...27

per values \_\_\_\_

Insp. values in parentheses Set equal delivery quant.

Setting point:

RATED SPEED

1st version

Speed rpm : 600

Rack travel in mm: 20.0 Testing: 1st rack travel in: 12.00 rpm : 1045...1061 Speed 2nd rack travel in: 4.00 Speed rpm : 1105...1135 4th rack travel in: 1250 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 7.2 Testina: rpm : 200 Speed Minimum rack trave: 11.00 Speed rpm : 300 Rack travel in mm : 7.10...7.30 Rack travel in mm : 2.00 rpm : 345...385 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 850 rpm Pressure hPa : 1000 Rack travel mm : 13.00...13.10 Measurement 1/min: 600 Speed 1st pressure hPa : 310 Rack travel in m: 12.60...12.70 2nd pressure hPa : 220 Rack travel in m: 11.90...12.10 3rd pressure hPa : -Rack travel in m: 11.50...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 110.5...112.5 1000 s: (108.0...115.0)

**BREAKAWAY** 

Speed

J05

1s. version

1mm rack travel less than

fuli load rack tr: 12.00

rpm : 1045...1061

# STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 330.0...370.0 1000 s: (327.0...373.0) Rack travel in mm: 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : VAL Edition : 3.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 984

Injection pump

Pump designation : PE6P120A320RS3327 EP type number : 0 411 826 811

Governor

Governor design. : RQV325...1050PA11077

: 0 421 814 077 Governer no.

Customer-spec. information Customer : VALMET

Engine : 612 DWI

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 103 assembly

Openina

pressure, bar : 207...210

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 700

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 19.6...19.8

100 s: (19.3...20.1)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325 2nd speed

Rack travel in mm: 4.0...4.2

Del.quantity cm3/:1.0...1.5

100 s: (0.8...1.8)

cm3 : 0.5Spread 100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 0.95...1.45 travel mm

2nd speed rpm : 411 travel mm

: 1.81...2.31

3rd speed : 470 rpm

: 2.54...3.04 travel mm 4th speed rpm : 729

travel mm : 4.36...4.86

5th speed : 1107 rom

: 8.28...8.78 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1180 Speed

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del.quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever position degrees: 111...119 Testing: 1st rack travel in: 10.65 Speed rpm: : 1990...1200 2nd rack travel in: 4.00 Speed rpm : 1150...1180 4th rack travel in: 1250 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 77...85 Testing: Speed : 225 mcm Minimum rack trave: 6.70 rpm : 325 Speed Rack travel in mm : 4.00...4.20 CONSTANT REGULATION Speed rpm : 335...405 TORQUE CONTROL Dimension a mm : -Torque control curve - 1st version 1st speed rpm : 700 Rack travel in m: 11.60...11.70 2nd speed rpm : 1050 Rack travel in m: 11.55...11.75 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 rpm hPa : 1500 Pressure Rack travel mm : 11.55...11.75 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 9.10...9.30 2nd pressure hPa : 360 Rack travel in m: 9.40...9.50 3rd pressure hPa : 580 Rack travel in m: 12.30...12.50 FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 184.0...190.0 1000 s: (181.0...193.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 133.0...135.0 1000 s: (130.0...138.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.65 rpm : 1090...1100 Speed STARTING FUEL DELIVERY : 100 Speed rpm

Speed rpm : 325 Rack travel in mm : 6.50...6.70

Remarks:

J07

Speed

1st version

Aneroid pressure h: 1500

rpm : 1050

Note remarks

Test sheet : MAN Edition : 13.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 401 849 732

Injection pump

Pump designation : PE10P120A520/4L\$3830

EP type number : 0 411 829 704

Governor

: RQV250...1150PA670-4 Governor design.

: 0 421 813 582 Governer no.

Customer-spec, information Customer : MAN

Engine : D2840LE

1st version kW : 441.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. "C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.20...4.30 Prestroke mm

: (4.15...4.35)

Rack travel in mm : 9.00...12.00 Firing order : 10-9-4-1-8-7-

6-3-5-2

Phasina : 0-45-72-117-144-189-

216-261-288-333

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed

Rack travel in mm: 7.0...7.2 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

travel mm : 2.00...2.40

2nd speed rpm : 750

travel mm : 6.10...6.30

rpm : 1150 3rd speed

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 1000

: 207.0...209.0 Del.quantity

1000 : (204.0...212.0)

Spread

cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 118...1246

Testing:

1st rack travel in: 11.20

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1315...1345 Speed

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 64...72

Testina:

Speed : 100 rpm

Minimum rack trave: 8.60 rpm : 250 Speed

Rack travel in mm : 7.00...7.20

Rack travel in mm: 2.00

Speed : 400...460 rom

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 1000 Pressure

Rack travel mm : 12.20...12.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.50...8.60

2nd pressure hPa : 275

Rack travel in m: 8.80...8.90

3rd pressure hPa : 600

Rack travel in m: 10.60...11.00

START CUT-OUT

Speed 1/min: 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed

rpm : 750

Del.quantity cm3/: 209.0...215.0

1000 s: (206.0...218.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 190.0...210.0

1000 s: (186.0...214.0)

LOW IDLE

Speed : 300 rpm

Rack travel in mm : 5.20...5.40

Del.quantity cm3/: 17.0...23.0

1000 s: (14.0...26.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

AFPLICATION : MAN-NR. 2-7779

Installation 2300

Note remarks

Test sheet : MAN Edition : 03.12.93

Replaces

Test oil : 130-4113

Combination no. : 0 401 849 756

Injection pump

Pump designation: PE10P120A520/4LS3860

EP type number : 0 411 829 710

Governor

Governor design. : RQV300...900PA668-9

Governer no. : 0 421 814 051

Customer-spec. information Customer : MAN

Engine : D2840LE

1st version kW : 365.0 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina |

pressure, bar : 207...210

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.20...4.30 Prestroke mm : (4.15...4.35)

Rack travel in mm : 9.00...12.00

Firing order : 10- 9- 4- 1- 8- 7-

6-3-5-2

Phasing : 0-45-72-117-144-189-

216-261-288-333 : 0.50 (0.75)

Tolerance + - °

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 19.8...20.0

100 s: (19.6...20.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 4.6...5.0 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.3)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed travel mm

: 0.96...1.16

2nd speed rpm : 440

travel mm : 3.24...3.64

3rd speed rpm : 710

: 5.39...5.79 travel mm

rpm : 970 4th speed

: 8.36...8.56 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1015 Speed

Rack travel in mm : 8.10...10.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

: 198.0...200.0 Del.quantity 1000 : (195.0...203.0)

: 5.00 Spread cm3

1000 : (9.00)

#### RATED SPEED

1st version Control Lever

position degrees: 116...124

Testing:

1st rack travel in: 9.40 rpm : 940...950 Speed 2nd rack travel in: 4.00

Speed rpm : 1000...1030

4th rack travel in: 1200

Speed rpm : 0.00...1.90

LOW IDLE 1 Control lever

position degrees: 62...70

Testina:

Speed rpm : 150 Minimum rack trave: 5.70 Speed rpm: 250 Rack travel in mm: 4.70...4.90

Rack travel in mm: 2.00 Speed rpm : 340...400

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 9.40

rpm : 940...950 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0 1000 s: (186.0...214.0)

Remarks:

: MAN-NR. 3-7251

Note remarks

Test sheet : PEN

Edition : 03.12.93

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 876 346

Injection pump

Pump designation : PE6P110A320RS497 EP type number : 0 411 816 165

Governor

Governor design. : RSV250...1200P1A374-

13

: 0 421 833 424 Governer no.

Customer-spec. information Customer : PENTA

Engine : TID 72A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Pr.stroke mm

: (2.95...3.15) Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3-6-2-4 Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.30 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm: 5.1...5.3 Del.quantity cm3/: 1.7...2.1

100 s: (1.4...2.3) cm3 : 0.3

Spread 100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1500

Del.quantity : 138.0...140.0 1000 : (135.0...143.0)

cm3 : 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 114...122

Testing:

1st rack travel in: 11.85

rpm : 1210...1220 Speed

2nd rack travel in: 4.00

rpm : 1265...1295 Speed

4th rack travel in: 1400

rpm : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 73...81

Setting point w/out bumper spring

rpm : 250 Rack travel in mm: 4.7

Testing:

Speed rpm : 100 Minimum rack trave: 20.00 : 250 Speed rpm

Rack travel in mm : 5.10...5.30

Rack travel in mm: 2.00 : 310...370 Speed rom

Aneroid/Altitude Compensator Test

1st version Settina

Speed : 500 rpm hPa : 1500 Pressure

Rack travel mm : 12.80...12.90

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.50

2nd pressure hPa : 310

Rack travel in m: 9.40...9.50

3rd pressure hPa : 910

Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed

rpm : 700 Del.quantity cm3/: 76.0...78.0

1000 s: (73.0...81.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.85

rpm : 1210...1220 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/ : 185.0...215.0

1000 s: (181.0...219.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 200

Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...23.5) Spread cm3: 3.00

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 Test sheet : PEN 12,2 d Edition : 3.12.93 Replaces : 16.01.91 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 401 876 780 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS3206-1 EP type number : 0 411 826 775 BASIC SETTING Governor Governor design. : RSV250...900P4A550 1st speed rpm: 700 : 0 421 833 354 Governer no. Rask travel in mm : 12.20...12.30 Customer-spec. information Customer : PENTA Del.quantity cm3/: 29.8...30.0 Engine : TID121LP 100 s: (29.5...30.3) 1st version kW : 295.0 cm3 : 0.5 Spread Rated speed : 1800 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Test oil inlet temp. °C : 38...42 Overflow valve Spread : 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Test nozzle holder : 1 688 901 019 assembly Speed Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 1st version Test lines : 1 680 750 067 Speed Del.quantity Outside diameter x Wall thickness Spread cm3 x Length mm : 6.00x1.50x1000

Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9) cm3 : 0.5100 s: (0.8) Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 5.00FULL LOAD DELIV. AT FULL LOAD STOP rpm : 700 : 298.0...300.0 1000 : (295.0...303.0) : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 103...111 Testing:

1st rack travel in: 11.20

(A) Injection pump setting values

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Insp. /alues in parentheses Set equal delivery quant.

Speed rpm: 945...955

2nd rack travel in: 4.00

Speed rpm : 985...1015

4th rack travel in: 1150

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 4.3 Speed rpm : 300

Rack travel in mm: 4.70...4.90

Rack travel in mm : 2.00 Speed rpm : 340...400

#### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.20 Speed rpm : 945...955

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 265.0...295.0

1000 s: (261.0...299.0)

Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

Note remarks

Test sheet : SCA Edition : 3.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 792

Injection pump

Pump designation : PE6P12JA32ORS3313 EP type number : 0 411 826 807

Governor

Governor design. : RSV350...1100P8A558

Governer no. : 0 421 833 397

Customer-spec. information Customer : SCANIA

Engine : D9

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 683 901 104 assembly

Opening

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Teut pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 14.3...14.5

100 s: (14.0...14.8)

Spread cm3 : 0.8

100 s: (1.2)

rpm : 350.0 2nd speed Rack travel in mm: 4.6...4.8 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.4)

Spread cm3 : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 1500

: 143.0...145.0 Del.quantity 1000 : (140.0...148.0)

cm3 : 8.00

Spread 1000 : (12,0)

RATED SPEED

1st version Control lever

position degrees: 109...117

Testing:

1st rack travel in: 10.60

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1220...1250

3rd rack travel in: 4.00

rpm : 1230...1260 Speed

4th rack travel in: 1350

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 71...79 Setting point w/out bumper spring

npm : 350 Rack travel in mm: 4.2

Testing:

Speed rpm : 100 Minimum rack trave: 10.10 rpm : 350

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

Speed rpm : 505...565

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm hPa : 1500 Pressure

Rack travel mm : 11.60...11.70

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.50

2nd pressure hPa : 280

Rack travel in m: 11.10...11.20 3rd pressure hPa : 210

Rack travel in m: 10.55...10.85

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 rpm : 1100 Speed

Del.quantity cm3/: 141.0...149.0

1000 s: (139.0...151.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 105.0...107.0

1000 s: (102.0...110.0)

BRIAKAWAY

1st version 1mm rack travel less than full load rack tr: 10.60

Speed rbm : 1140...1150

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.guantity cm3/: 80.0...120.0

1000 s: (76.0...124.0)

Rack travel in mm : 10.10...10.50

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4.60...4.80

Remarks:

Start-of-delivery setting with ROBO diaphragm.

J17

Note remarks

Test sheet : SCA Edition : 3.12.93

Replaces

: -

Test oil : ISO-4113

Combination no. : 0 401 876 793

Injection pump

Pump designation : PE6P120A320RS3314 EP type number : 0 411 826 806

Governor

Governor design. : RSV350...1100P1A559

Governer no. : 0 421 833 389

Customer—spec. information Customer : SCANIA

Engine

: D9

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 104

Opening 1 4 1

pressure, bar : 250...253

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50 : (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 15.1...15.3

100 s: (14.8...15.6)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 500.0

Rack travel in mm : 9.8...10.20 Del.quantity cm3/ : 11.5...11.7

100 s: (11.2...12.0)

Spread cm3 : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700 Aneroid pressure h: 1500

Del.quantity : 151.0...153.0 1000 : (148.0...156.0)

cm3 : 8.00

1000 : (12.0)

RATED SPEED

Spread

1st version Control lever

position degrees: 86...94

Testing:

1st rack travel in: 10.45 Speed rpm : 750...755 2nd rack travel in: 4.00

rpm : 788...797 Speed 4th rack travel in: 850 rpm : 0.30...1.40 Speed

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed MON hPa : 1500 Pressure

: 11.40...11.50 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.20

2nd pressure hPa : 250

Rack travel in m: 10.90...11.00

3rd pressure hPa : 180

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 115.0...117.0 1000 s: (112.0...120.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.45 rpm : 750...755 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 70.0...110.0 1000 s: (66.0...114.0)

Rack travel in mm: 9.80...10.20

LOW IDLE

rpm : 350

Rack travel in mm : 4.60...4.80

Remarks:

Start-of-delivery setting with ROBO

diaphragm.

**APPLICATION** 

Generator

J19

Note remarks

Test sheet : VOL

Edition : 03.12.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 798

Injection pump

Pump designation: PE6P110A320RS3109-2

EP type number : 0 411 816 792

Governor

Governor design. : RSV200...900P1A568-2

Governer no. : 0 421 833 417

Customer-spec. information Customer : VOLVO

Engine : TD 101 GE

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter x Wall thickness

: 8.00x2.50x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 18.3...18.5

100 s: (18.1...18.7)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0Rack travel in mm: 4.2...4.4 Del.quantity cm3/: 1.7...2.1

100 s: (1.5...2.3)

Spread cm3 : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Spe∈d

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 183.0...185.0 Del.quantity

1000 : (181.0...187.0) : 4.00 cm3

Spread

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 12.55 rpm : 865...875 Speed

2nd rack travel in: 4.00

rpm : 915...945 Speed

4th rack travel in: 1070

Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever

position degrees: 66...74

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 3.7

Testing:

Speed rpm : 100 Minimum rack trave: 20.00 Speed rpm : 250

Rack travel in mm : 4.20...4.40

Rack travel in mm : 2.00

Speed rpm : 270...330

### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.55 Speed rpm : 865...875

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 165.0...185.0

1000 s: (161.0...189.0)

Rack travel in mm : 20.00...21.00

:

Remarks:

Excavator

APPLICATION

Note remarks

Test sheet : PEN Edition : 3.12.93 Replaces : -

keptaces

Test oil : ISO-4113

Combination no. : 0 401 876 799

Injection pump

Pump designation : PE6P120A320RS3206-4

EP type number : 0 411 826 810

Governor

Governor design. : RSV250...900P4A550

Governer no. : 0 421 833 354

Customer-spec. information Customer : PFNTA

Engine

: TD 121 G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., par: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.30 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 24.5...24.7

100 s: (24.2...25.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 4.7...4.9 Del.quantity cm3/: 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.5

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 245.0...247.0

1000 : (242.0...250.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 103...111

Testing:

1st rack travel in: 10.35 Speed rpm : 945...955 2nd rack travel in: 4.00

Speed rpm : 985...1015

4th rack travel in: 1150

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 70...78 Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 4.3

Testing:

Speed rpm : 100 Minimum rack trave: 20.00 rpm : 300

Rack travel in mm : 4.70...4.90

Rack travel in mm: 2.00 rpm : 340...400 Speed

### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.35 rpm : 945...955 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 265.0...295.0 1000 s: (261.0...299.0) Rack travel in mm: 20.00...21.00

Remarks:

**APPLICATION** 

Excavator

Note remarks

Test sheet : SCA : 3.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 800

Injection pump

Pump designation : PE6P12OA32ORS3313 EP type number : 0 411 826 807

Sovernor

Governor design. : RSV350...1050P8A558

-1

Governer no. : 0 421 833 423

Customer-spec. information Customer : SCANIA

Engine : D9

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 104

Openina

pressure, bar : 250...253

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 15.9...16.1

100 s: (15.6...16.4)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 350.0 Rack travel in mm : 4.6...4.8 Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm3 : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700 Aneroid pressure h: 1500

Del.quantity : 159.0...161.0 1000 : (156.0...164.0)

Spread cm3 : 8.00

1000 : (12.0)

RATED SPEED

1st version Control lever

position degrees: 102...110

Testina:

1st rack travel in: 10.10

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1155...1185

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 70...78

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm: 4.2

Testina:

Speed : 100 תכרו Minimum rack trave: 9.80 rpm : 350

Rack travel in mm : 4.60...4.80

Rack travel in mm: 2.00 rpm : 505...565 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 1500

Rack travel mm : 12.30...12.40

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.20

2nd pressure hPa : 280

Rack travel in m: 11.10...11.20

3rd pressure hPa : 180

Rack travel in m: 10.35...10.65

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed : 1050 rom

Del.quantity cm3/: 132.0...140.0 1000 s: (130.0...142.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/: 105.0...107.0 1000 s: (102.0...110.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 80.0...120.0

1000 s: (76.0...124.0) Rack travel in mm : 9.80...10.20

Remarks:

Start-of-delivery setting with ROBO

diaphragm.

J25

Note remarks

Test sheet : PEN Edition : 8.12.93 Replaces

: ISO-4113 Test oil

Combination no. : 0 401 876 801

Injection pump

Pump designation: PE6P120A320RS3189 EP type number : 0 411 826 759

Governor

Governor design. : RSV250...900P1A421

-11

Governer no. : 0 421 833 425

Customer-spec. information Customer : PENTA

Engine : TWD 710P

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70

: (2.55...2.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 7.60...7.70

Del.quantity cm3/: 14.5...14.7

100 s: (14.2...15.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 4.4...4.8

Del.quantity cm3/ : 2.0...2.6

100 s: (1.8...2.8) cm3 : 0.5

Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 145.0...147.0 Del.quantity

1000 : (142.0...150.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 97...105

Testing:

1st rack travel in: 6.65

rpm : 920...930 Speed

2nd rack travel in: 4.00

Speed rpm : 945...975

4th rack travel in: 1070

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm: 4.1 Speed rpm : 250
Rack travel in mm : 4.40...4.80
Rack travel in mm : 2.00

rpm : 340...400 Speed

## BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 6.65

Speed rpm : 920...930

Remarks:

J27

Note remarks

Test sheet : PEN Edition : 8.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 401 376 802

Injection pump

Pump designation : PE6P120A320RS3206-1

EP type number : 0 411 826 775

Governor

Governor design. : RSV250...900P4A550

-1

Governer no. : 0 421 833 427

Customer-spec. information Customer : PENTA

Engine : TWD1210P

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 700

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 24.0...24.2

100 s: (23.7...24.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 2.0...2.6

100 s: (1.8...2.8)

Spread cm3 : 0.5100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 240.0...242.0

1000 : (237.0...245.0)

Spread : 5.00 cm3 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testina:

1st rack travel in: 10.05 Speed rpm : 920...930

2nd rack travel in: 4.00

Speed rpm : 955...985 4th rack travel in: 1100 Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 70...78 Setting point w/out bumper spring Speed rpm : 300

Rack travel in mm: 4.3 Speed rpm : 300 Rack travel in mm : 4.70...4.90

Rack travel in mm : 2.00

rpm : 340...400 Speed

## BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.05 Speed rpm : 920...930

Remarks:

:

Note remarks

Test sheet : PEN Edition : 8.12.93

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 876 803

Injection pump

Pump designation : PE6P120A320RS3189 EP type number : 0 411 826 759

GOVERNOR

Governor design. : RSV350...1250P0A578

Governer no. : 0 421 833 434

Customer—spec. information Customer : PENTA

Engine : TWD 630ME

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50

: (2.35...2.55)

Rack travel in ma: 9/ ...12.00

K02

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.30 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 13.2...13.4

100 s: (13.0...13.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.3...5.7 Del.quantity cm3/ : 1.7...2.1 100 s: (1.4...2.4)

Spread cm3 : 0.5

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

peed rpm: 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

Del.quantity : 145.0...147.0 1900 : (142.0...150.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 86...94

Testing:

1st rack travel in: 10.75

Speed rpm : 1265...1275

2nd rack travel in: 4.00

Speed rpm : 1290...1320 4th rack travel in: 1340 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 58...66 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.0 Speed rpm : 350 Rack travel in mm : 5.3...5.780 Rack travel in mm : 2.00 rpm : 370...430 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 1200 Pressure Rack travel mm : 11.70...11.80 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 9.00...9.40 2nd pressure hPa : 240 Rack travel in m: 9.35...9.45 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 700 Del.quantity cm3/ : 79.0...81.0 1000 s: (76.0...84.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.75 Speed rpm : 1265...1275 Remarks:

Note remarks

Test sheet : LIE

: 08.12.93 Edition Replaces : 21.08.92 Test oil : ISO-4113

Combination no. : 0 401 878 717

Injection pump

Pump designation : PE8P110A32OLS3853-1

EP type number : 0 411 818 726

Governor

Governor design. : RSV400...1000P1A554

: 0 421 833 376 Governer no.

Customer-spec, information Customer : LIEDHERR

Engine : 0 9308 TI

1st version kW : 288.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 Prestroke mm

: (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-8-7-2-6-3-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 14.60...14.70

Del.quantity cm3/: 19.6...19.8

100 s: (19.3...20.1)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 400.02nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 1500

: 196.0...198.0 Del.quantity

1000 : (193.0...201.0)

cm3 : 4.00Spread

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:

1st rack travel in: 13.65 Speed rpm : 940...950

2nd rack travel in: 4.00 rpm : 985...1015 Speed

**KO4** 

3rd rack travel in: 4.00 rpm : 1015...1045 Speed 4th rack travel in: 1100 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 71...79 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm : 5.7 : 400 Speed rpm Rack travel in mm : 5.90...6.10 Rack travel in mm: 2.00 Speed rpm : 490...550 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 14.60...14.70 2nd speed rpm : 500 Rack travel in m: 14.55...14.75 3rd speed rpm : 350 Rack travel in m: 15.80...16.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rom hPa : 1500 Pressure : 14.60...14.70 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 13.55...13.75 2nd pressure hPa : 780 Rack travel in m: 14.35...14.45 3rd pressure hPa : 710 Rack travel in m: 13.80...14.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -: 600 Speed rpm Del.quantity cm3/: 171.0...173.0 1000 s: (168.0...176.0) cm3 : 8.00 Spread 1000 s: (12.0)

1mm rack travel less than

full load rack tr: 13.65 Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 12.0...18.0

1000 s: (9.0...21.0)

Spread cm3 : 6.00 1000 s: (10.00)

Remarks:

1st version KO5

**BREAKAWAY** 

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1- 8- 7- 2- 6- 3-Note remarks Test sheet : LIE Edition : 08.12.93 : 0-45-90-135-180-225-Phasing Replaces : 27.11.92 270-315 : ISO-4113 Test oil : 0.50 (0.75) Tolerance + - ° Combination no. : 0 401 878 717B BASIC SETTING Injection pump 1st speed rpm: 900 Pump designation : PE8P110A320LS3853 EP type number : 0 411 818 720 Rack travel in mm : 13.40...13.50 Governor Governor design. : RSV400...1000P1A554 Del.quantity cm3/: 16.6...16.8 Governer no. : 0 421 833 376 100 s: (16.3...17.1) Customer-spec. information Customer : LIEBHERR Spread cm3 : 0.4Engine : D 9308 T 100 s: (0.7) 1st version kW : 255.0 rpm : 400.02nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.2...1.8 Rated speed : 2000 TEST BENCH REQUIREMENTS 100 s: (0.9...2.1) cm3 : 0.6Spread Test oil 100 s: (1.0) inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Overflow valve Control-lever position : 1 417 413 025 Degree: -3 Speed rpm : 800 Inlet press., bar: 1.50 Rack travel in mm : 0.30...0.70 Test nozzle holder Governor spring pre-tension : 0 681 343 009 assembly Click setting x : ? Opening 1997 FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar : 207...210 1st version Speed rpm : 900 Test lines : 1 680 750 089 Aneroid pressure h: 1500 : 166.0...168.0 Del.quantity 1000 : (163.0...171.0) Outside diameter x Wall thickness : 4.00 Spread cm3 x Length mm : 8.00x2.50x600 1000 : (7.50)(A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version

Control lever

position degrees: 96...104

Testing: 1st rack travel in: 12.45 rpm : 940...950 Speed 2nd rack travel in: 4.00 rpm : 985...1015 Speed

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 Prestroke mm : (3.75...3.95) Rack travel in mm : 9.00...12.00

**KD6** 

3rd rack travel in: 4.00 rpm : 1015...1045 Speed 4th rack travel in: 1100 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring : 400 rpm Rack travel in mm: 5.7 Speed : 400 rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 430...490 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 13.40...13.50 2nd speed rpm : 500 Rack travel in m: 13.40...13.60 3rd speed rpm : 350 Rack travel in m: 14.60...15.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 550 man hPa : 1500 Pressure Rack travel mm : 13.40...13.50 Measurement 1/min: 550 Speed 1st pressure hPa : -Rack travel in m: 12.45...12.65 2nd pressure hPa : 685 Rack travel in m: 13.15...13.25 3rd pressure hPa : 620 Rack travel in m: 12.70...12.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 550 Speed Dal.quantity cm3/: 152.0...154.0 1000 s: (149.0...157.0) cm3 : 8.00Spread 1000 s: (12.0)

1mm rack travel less than

full load rack tr: 12.45 Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 12.0...18.0

1000 s: (9.0...21.0)

Spread cm3 : 6.00 1000 s: (10.00)

Remarks:

:

K07

**BREAKAWAY** 

1st version

Note remarks

Test sheet : MAN 10,0 e1
Edition : 08.12.93
Replaces : 11.01.93
Test oil : ISO-4113

Combination no. : 0 402 035 028

Injection pump

Pump designation : PES5P120A720/3LS528

EP type number : 0 412 025 022

Governor

Governor design. : RQV325...1000PA876

-10

Governer no. : 0 421 813 900

Customer-spec. information Customer : MAN

Engine : D2865LF/LU05

1st version kW : 198.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 13.00...14.00 Firing order : 1-3-5-4-2

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 5

BASIC SETTING

Phasing

1st speed rpm: 1000

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 22.0...22.2

100 s: (21.7...22.5)

: 0-72-144-216-288

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.7 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting or injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 1045

travel mm : 9.60...9.80

2nd speed rpm : 325

travel mm : 0.70...1.10

3rd speed rpm : 550

travel mm : 3.50...4.10

4th speed rpm: 800

travel mm : 6.50...6.90

5th speed rpm : 1300

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1000

Aneroid pressure h: 1000 Del.quantity : 220.0...222.0 1000 : (217.0...225.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 296...304 Testing: 1st rack travel in: 10.60 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1100...1130 Speed 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 252...260 Testing: Speed rpm : 100 Minimum rack trave: 6.10 rpm : 325 Speed Rack travel in mm : 4.30...4.70 CONSTANT REGULATION Speed rom : 340...460 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1000 Pressure Rack travel mm : 11.60...11.70 Measurement  $1/\min : 500$ Speed 1st pressure hPa :-Rack travel in m: 9.00...9.20 2nd pressure hPa : 150 Rack travel in m: 9.40...9.50

1st version Aneroid pressure h: 1000 : 750 rpm Del.quantity cm3/: 217.0...223.0 1000 s: (214.0...226.0) Aneroid pressure h: 1000 Speed : 550 rpm Del.quantity cm3/: 209.0...217.0 1000 s: (206.0...220.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.60 Speed rpm : 1040...1050 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) LOW IDLE Speed rpm : 325 Rack travel in mm : 4.30...4.70 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks: : MAN-NR. 3-7122 Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

Sp. ed

3rd pressure hPa : 390

FUEL DELIVERY CHARACTERISTICS

START CUT-OUT

Rack travel in m: 10.90...11.20

1/min : 245 (265)

: 3.50...3.60 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.45...3.65) Note remarks Rack travel in mm : 13.00...14.00 Firing order : 1- 3- 5- 4- 2 Test sheet : MAN 10,0 d1 : 08.12.93 Edition : 11.01.93 Replaces Test oil : ISO-4113 Phasina : 0-72-144-216-288 Combination no. : 0 402 035 029 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 5 Pump designation : PES5P120A720/3LS528 EP type number : 0 412 025 022 BASIC SETTING Governor Governor design. : RQ325/1000PA813-20 1st speed rpm: 1000 : 0 421 801 567 Governer no. Rack travel in mm : 11.60...11.70 Customer-spec. information Customer : MAN Del.quantity cm3/: 22.0...22.2 Engine : D2865LF/LU05 100 s: (21.7...22.5) : 198.0 1st version kW Spread cm3 : 0.5Rated speed : 2000 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 325.0Test oil Rack travel in mm: 4.3...4.7 inlet temp. °C : 38...42 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Overflow valve cm3 : 0.8Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 019 assembly rpm : 600 Rack travel in mm : 19.20...20.80 Opening. pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 1000Aneroid pressure h: 1000 Del.quantity : 220.0...222.0 Test lines : 1 680 750 075 1000 : (217.0...225.0) : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness x Length mm : 8.00x2.50x1000 RATED SPEED (A) Injection pump setting values 1st version Insp. Values in parentheses Set equal delivery quant. Setting point: per values Speed rpm : 600 Rack travel in mm: 20.0 BEGINNING OF DELIVERY Test pressure, bar: 30...32 Testing:

1st rack travel in: 10.60

Speed rpm : 1045...1061 2nd rack travel in: 4.00 rpm : 1120...1150 Speed 4th rack travel in: 1250 rom : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 4.5 Testing: Speed rpm : 100 Minimum rack trave: 6.00 Speed : 325 rpm Rack travel in mm : 4.30...4.70 Rack travel in mm: 2.00 Speed rpm : 360...40G TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1900 Rack travel in m: 12.10...12.20 2nd speed rpm : 825 Rack travel in m: 12.30...12.50 rpm : 550 3rd speed Rack travel in m: 12.50...12.70 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom Pressure hPa : 1000 : 11.60...11.70 Rack travel mm Measurement Speed  $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 9.00...9.20 2nd pressure hPa : 150 Rack travel in m: 9.40...9.50 3rd pressure hPa : 390 Rack travel in m: 10.90...11.20 START CUT-OUT 1/min : 245 (265) Speed. FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 217.0...223.0 1000 s: (214.0...226.0) Aneroid pressure h: 1000 Speed rpm : 550
Del.quantity cm3/: 209.0...217.0
1000 s: (206.0...220.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.60 rpm : 1045...1060 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0) LOW IDLE Speed rpm: 325 Rack travel in mm: 4.30...4.70 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: : MAN-NR. 3-7121 Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

Aneroid pressure h: 1000 Speed rpm : 750

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Phasing : 0-60-120-180-240-300 : MAN 11,9 u1 Test sheet : 08.12.93 Edition Tolerance + - ° : 0.50 (0.75) Replaces : 26.02.93 Test oil : ISO-4113 Time to cyl. no. : 6 Combination no. : 0 402 036 740 BASIC SETTING Injection pump 1st speed rpm: 700 Pump designation : PES6P120A720/3LS3255 EP type number : 0 412 026 739 Rack travel in mm : 15.00...15.10 Governor Governor design. : RQ300/1000PA813-13 Del.quantity cm3/: 24.2...24.4 Governer no. : 0 421 801 529 100 s: (23.9...24.7) Customer-spec. information Customer : MAN Spread cm3 : 0.5Engine : D2866LFC3 100 s: (0.9) 1st version kW : 273.0 2nd speed rpm : 300.0Rack travel in mm: 4.9...5.3 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Test oil Spread cm3 : 0.8 inlet temp. °C : 38...42 100 s: (1.2) Overflow valve GUIDE SLEEVE POSITION : 1 417 413 025 Control-lever position Degree: -2 Inlet press., bar: 1.50 rpm : 550 Speed Rack travel in mm : 19.20...20.80 Test nozzle holder : 1 688 901 019 assembly FULL LOAD DELIV. AT FULL LOAD STOP Openina 1st version pressure, bar : 207...210 Speed rpm : 700 Aneroid pressure h: 1200 Del.quantity : 242.0...244.0 Test Lines : 1 680 750 075 1000 : (239.0...247.0) cm3 : 5.00 Spread Outside diameter 1000 : (9.00) x Wall thickness x Length mm : 8.00x2.50x1000 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values \_\_\_\_ Speed : 550 rpm Rack travel in mm: 20.0 BEGINNING OF DELIVERY

Testing:

Speed

Speed

1st rack travel in: 14.00

2nd rack travel in: 4.00

3rd rack travel in: 4.00

rpm : 1045...1061

rpm : 1160...1190

K12

Prestroke mm

Firing order

Test pressure, bar: 30...32

Rack travel in mm : 14.50...15.50

: 3.70...3.80

: (3.65...3.85)

: 6-2-4-1-5-3

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

speed rpm : 300 Rack travel in mm: 5.1

Testina:

Speed rpm : 200 Minimum rack trave: 6.50 : 300 חסיי

Rack travel in mm : 5.00...5.20

Rack travel in mm : 2.00 Speed rpm : 360...400

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm hPa : 1200 Pressure

Rack travel mm : 15.00...15.10

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 110

Rack travel in m: 12.00...12.10

3rd pressure hPa : 470

Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 1000 Speed

Del.quantity cm3/: 241.0...245.0 1000 s: (238.0...248.0)

Spread cm3 : 8.00

1000 s: (12.)

Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.00

rpm : 1045...1061 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 225.0...245.0

1000 s: (221.0...249.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 4.90...5.30 Del.quantity cm3/: 17.0...23.0

1000 s: (14.0...26.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MAN-NR. 0-7050

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.50...3.60 Prestroke mm : (3.45,...3.65) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks : SAC 10,8 a : 08.12.93 Test sheet Edition Replaces : 21.02.92 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 036 748 Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ Injection pump BASIC SETTING Pump designation : PES6P120A320/3RS3297 EP type number : 0 412 026 753 1st speed rpm: 1000 Governor Governor design. : RQV375...1000PA1022 Rack travel in mm : 11.90...12.00 Governer no. : 0 421 813 981 Del.quantity cm3/: 20.9...21.1 Customer-spec, information Customer : SACM 100 s: (20.6...21.4) Engine : UD18L6R3D Spread cm3 : 0.51st version kW : 219.0 100 s: (0.9) Rated speed : 2000 2nd speed rpm : 375.0 Rack travel in mm: 4.9...5.3 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.7...2.3 Test oil 100 s: (1.4...2.6) inlet temp. °C : 38...42 cm3 : 0.8Spread 100 s: (1.2) Overflow valve : 1 419 992 198 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 1045 assembly : 1 688 901 019 : 8.30...8.50 travel mm 2nd speed rpm : 375 **Opening** : 1.70...2.10 travel mm : 207...210 pressure, bar 3rd speed rpm : 750 : 5.60...6.20 travel mm Orifice plate rpm : 1350 4th speed diameter mm : 0,8 : 11.00...12.00 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 075 Control-lever position Degree: -1 Outside diameter rpm : 1150 Speed x Wall thickness Rack travel in mm : 9.90...12.50 x Length mm : 8.00x2.50x1000 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values 1st version Insp. Values in parentheses Set equal delivery quant. Speed rpm : 1000 per values \_\_\_\_ Del.quantity : 209.0...211.0 1000 : (206.0...214.0)

: 5.00

: (9.00)

cm3

1000

Spread

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

## RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 10.90

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1130...1160 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 68...76

Testing:

Speed : 100 rpm Minimum rack trave: 6.60 Speed rpm

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

: 370...500 Speed rom

START CUT-OUT

1/min: 295 (315) Speed

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.90

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 390.0...420.0 1000 s: (386.0...424.0) Rack travel in mm: 19.50...21.00

LOW IDLE

Speed rpm : 375

Rack travel in mm : 4.90...5.30 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) Spread cm3: 8.00

1000 s: (12.00)

Remarks:

**APPLICATION** 

Tractor (tractor engines)

K15

Note remarks

Test sheet : CUM : 27.09.93 Edition Replaces : 01.93

: ISO-4113 Test oil

Combination no. : 0 402 036 749

Injection pump

Pump designation : PES6P110A120RS3286

EP type number : 0 412 016 737

Governor

Governor design. : RQV350...1150PA1014

-2K

: 0 421 815 296 Governer no.

Customer-spec, information Customer : CDC

Engine : 6CTA-A

1st version kW : 168.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.20...3.30 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 15.40...15.50

Del.quantity cm3/: 15.3...15.5

100 s: (15.1...15.7)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 350.02nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.9...2.3

100 s: (1.6...2.5)

cm3 : 0.6Spread 100 s: (0.9)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 350 : 2.10...2.40 travel mm

2nd speed rpm : 450

: 3.40...3.80 travel mm

3rd speed : 900 rpm

: 5.60...6.00 travel mm

: 1200 4th speed rpm

travel mm : 8.10...8.30

5th speed : 1400 rpm

: 10.20...10.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1200

Del.quantity : 153.0...155.0 1000 : (151.0...157.0) Spread cm3: 4.00 1000 : (7.50)RATED SPEED 1st version Control lever position degrees: 108...116 Testing: 1st rack travel in: 14.20 Speed rpm : 1215...1225 2nd rack travel in: 4.00 rpm : 1380...1410 Speed 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 65...73 Testing: Speed rpm : 275 Minimum rack trave: 7.30 Speed rom Rack travel in mm : 5.90...6.10 CONSTANT REGULATION Speed rpm : 350...650 TORQUE CONTROL. Dimension a mm : ? Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 15.40...15.50 npm : 750 2nd speed Rack travel in m: 14.10...14.50 3rd speed rpm : 1150 Rack travel in m: 15.20...15.40 4th speed : 650 rpm Rack travel in m: 13.90...14.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1100 rom hPa : 1200 Pressure Rack travel mm : 15.40...15.50 Measurement 1/min: 1100 Sp ed 1st pressure hPa : -

Rack travel in m: 8.90...9.30

2nd pressure hPa : 290

Rack travel in m: 10.60...10.70 3rd pressure hPa : 600 Rack travel in m: 13.60...14.00 START CUT-OUT Speed 1/min : 290 (300) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 750 rpm Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0) cm3 : 8.00 Spread 1000 s: (12.) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 74.5...78.5 1000 s: (72.5...80.5) , BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 14.20 Speed rpm : 1215...1225 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 135.0...175.0 1000 s: (130.0...180.0) Rack travel in mm : 10.00...12.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 19.0...23.0 1000 s: (16.5...25.5) cm3 : 6.00Spread 1000 s: (9.00) Remarks: : C.D.C. # 3921971 Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet Edition : CUM : 27.09.93 Replaces : 01.93 Test oil : ISO-4113 Combination no. : 0 402 036 750 Injection pump Pump designation : PES6P110A12DRS3286 EP type number : 0 412 016 737 Governor Governor design. -3K : 0 421 815 298 Governer no. Customer-spec. information Customer : CDC Engine : 6CTA-A 1st version kW : 156.5 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008

: RQV350...1150PA1014 Outside diameter × Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 22...24

Prestroke mm : 3.20...3.30 : (3.15...3.35) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasina : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1100Rack travel in mm : 14.60...14.70 Del.quantity cm3/: 14.3...14.5 100 s: (14.1...14.7) cm3 : 0.4Spread 100 s: (0.7) 2nd speed rpm : 350.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 1.9...2.3 100 s: (1.6...2.5) cm3 : 0.6Spread 100 s: (0.9) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 350 : 2.10...2.40 travel mm 2nd speed rpm : 450 travel mm : 3.40...3.80 : 900 3rd speed rpm 5.60...6.00 travel mm : 1200 4th speed rpm travel mm : 8.10...8.30 5th speed : 1400 rpm travel mm : 10.20...10.60 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 Aneroid pressure h: 1200 Del.quantity : 143.5...145.5 1000 : (141.5...147.5) Spread cm3 : 4.00

1000

: (7.50)

RATED SPEED

1st version Control Lever

position degrees: 105...113

Testing:

1st rack travel in: 13.40

Speed rpm : 1220...1230

2nd rack travel in: 4.00

Speed rpm : 1365...1395 4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 63...71

Testing:

Speed mom Minimum rack trave: 7.30 : 35C rpm .

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 350...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 14.60...14.70

rpm : 750 2nd speed

Rack travel in m: 13.50...13.70

3rd speed rpm : 1150

Rack travel in m: 14.40...14.60

4th speed rpm : 650

Rack travel in m: 13.20...13.60

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 1100 rpm Pressure hPa : 1200

Rack travel mm : 14.60...14.70

Measurement

1/min: 1100 Speed

1st pressure hPa : -

Rack tra/el in m: 8.90...9.30

2nd pressure hPa : 290

Tack travel in m: 10.60...10.70

3rd pressure hPa : 600

Rack travel in m: 13.60...14.00

START CUT-OUT

Speed  $1/\min : 290 (300)$ 

FUEL DELIVERY CHARACTERISTICS

1st version

Spread

Aneroid pressure h: 1200

Speed : 750 rpm

Del.quantity cm3/: 139.0...143.0 1000 s: (137.0...145.0)

cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 74.5...78.5

1000 s: (72.5...80.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.40

Speed rpm : 1220...1230

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 135.0...175.0

1000 s: (130.0...180.6)

Rack travel in mm : 10.00...12.00

LOW IDLE

Speed : 350 rpm

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 19.0...23.0

1000 s: (16.5...25.5)

cm3 : 6.00 Spread

1000 s: (9.00)

Remarks:

: C.D.C. # 3921972

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.50...3.60 Prestroke mm : (3.45...3.65) Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Test sheet : RVI 9,8 m Edition : 09.12.93 Replaces : 31.01.92 Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 402 046 344 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6P120A320RS3277 EP type number : 0 412 026 747 1st speed rpm: 650 Governor Governor design. : RQV275...1050PA995 Rack travel in mm : 9.80...9.90 Governer no. : 0 421 813 929 Del.quantity cm3/: 18.4...18.6 Customer—spec. information Customer : RVI 100 s: (18.1...18.9) Engine : MIDR 06 20 45 cm3 : 0.5 Spread 1st version kW : 222.0 100 s: (0.9) Rated speed : 2100 2nd speed rpm : 275.0TEST BENCH REQUIREMENTS Rack travel in mm : 5.65...5.85 Del.quantity cm3/: 2.1...2.7 Test oil 100 s: (1.8...3.0) inlet temp. °C : 38...42 Spread cm3 : 0.8 100 s: (1.2) Overflow valve : 1 417 413 025 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder rpm : 1130 1st speed : 1 688 901 105 assembly : 8.20...8.40 travel mm : 275 2nd speed rpm Opening : 0.70...1.10 travel mm pressure, bar : 207...210 : 500 3rd speed rpm travel mm : 3.50...4.10 Orifice plate 4th speed : 750 rpm diameter mm : 0,8 travel mm : 5.30...5.70 5th speed : 1450 rpm : 11.00...12.00 travel mm Test lines : 1 680 750 089 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 x Lenath mm : 8.00x2.50x600 rpm : 1125 Rack travel in mm : 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant. per values 1st version Speed rpm : 650 BEGINNING OF DELIVERY Aneroid pressure h: 1000 Test pressure, bar: 25...27 : 184.0...186.0 Del.quantity

1000 : (181.0...189.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 296...304

Testing:

1st rack travel in: 8.80

rpm : 1135...1145 Speed

2nd rack travel in: 4.00

Speed rpm : 1205...1235 4th rack travel in: 1350

Speed npm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 244...252

Testing:

: 200 Speed rpm Minimum rack trave: 7.45 Speed : 275 rom

Rack travel in mm : 5.65...5.85

CONSTANT REGULATION

rpm : 310...430 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed mqn Pressure hPa : 1000

Rack travel mm : 9.80...9.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 7.85...8.05

2nd pressure hPa : 360

Rack travel in m: 9.25...9.35

3rd pressure hPa : 200

Rack travel in m: 8.35...8.55

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 1050 Speed

Del.quantity cm3/: 172.0...178.0 1000 s: (169.0...181.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 109.0...111.0

1000 s: (106.0...114.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80

Speed rpm : 1135...1145

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 125.0...155.0 1000 s: (121.0...159.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.50...5.90 Del.quantity cm3/: 21.0...27.0

1000 s: (18.0...30.0)

cm3 : 8.00Spread

1000 s: (12.00)

:

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 12,0 f2 Edition : 14.1.94 : 03.12.92 Replaces Test oil : ISO-4113 Combination no. : 0 402 046 791 Injection pump Pump designation: PES6P120A320RS3139 EP type number : 0 412 026 718 Governor Governor design. : RQV275...950PA728-4 : 0 421 813 678 Governer no. Customer-spec, information Customer : RVI Engine : MIDR 063540 H 1st version kW : 264.0 Rated speed ; 1900 TEST BENCH REQUIREMENTS Test oil : 38...42 inlet temp. °C Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test Lines : 1 680 750 089

Outside diameter x Wall thickness x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm : 5.6...6.0 Del.quantity cm3/ : 2.4...2.8 100 s: (2.1...3.1)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed rpm : 275 travel mm : 1.30...1.70 2nd speed : 450 riom travel mm : 3.30...3.70

rpm : 800 3rd speed

travel mm : 5.60...6.00 : 950 4th speed rpm

: 6.70...6.90 travel mm rpm : 1500 5th speed

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

Del.quantity : 212.0...214.0 1000 : (209.0...217.0) Spread cm3 : 5.001000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 59...67

Testing:

1st rack travel in: 12.30

Speed rpm : 1015...1025

2nd rack travel in: 4.00

Speed rpm : 1160...1190 4th rack travel in: 1250

Speed mpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 9...17

Testing:

Speed : 200 man Minimum rack trave: 7.60 : 275 Speed rom

Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

Speed rpm : 295...400

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rpm hPa : 1000 Pressure

Rack travel mm : 13.30...13.40

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : -

Rack travel in m: 9.10...9.50

2nd pressure hPa : 200

Rack travel in m: 9.90...10.00

3rd pressure hPa : 660

Rack travel in m: 12.20...12.50

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed rpm : 950

Del.quantity cm3/: 210.0...216.0

1000 s: (207.0...219.0)

Aneroid pressure h: -

Speed rpm : 500 Del quantity cm3/ : 118.0...120.0

1000 s: (115.0...123.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

rpm : 1015...1025 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...180.0

1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.60...6.00 Del.quantity cm3/: 24.0...28.0

1000 s: (21.0...31.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle

after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.50...3.60 Prestroke mm : (3.45...3.65) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : RVI 9,8 r : 09.12.93 Edition : 03.04.92 Replaces : ISO-4113 Test oil : 0-60-120-180-240-300 Phasina Combination no. : D 402 046 829 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation: PES6P120A320RS3284 EP type number : 0 412 026 749 rom: 700 1st speed Governor Governor design. : RQV275...1C50PA995-1 Rack travel in mm: : 10.50...10.60 : 0 421 813 941 Governer no. Del.quantity cm3/: 14.8...15.0 Customer-spec. information Customer : RVI 100 s: (14.5...15.3) : MIDR 062045 B/3 Engine Spread cm3 : 0.51st version kW : 186.0 100 s: (0.9) Rated speed : 2100 2nd speed rpm : 275.0TEST BENCH REQUIREMENTS Rack travel in mm: 4.9...5.3 Del.quantity cm3/: 2.2...2.6 100 s: (1.9...2.9) Test oil inlet temp. °C : 38...42 Spread cm3 : 0.8100 s: (1.2) Overflow valve : 1 417 413 025 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 1130 : 1 688 901 105 assembly : 8.10...8.30 travel mm : 275 2nd speed man : 0.70...0.90 Openina travel mm pressure, bar : 207...210 : 450 3rd speed rpm : 2.80...3.40 travel mm Orifice plate : 750 4th speed rpm diameter mm : 0,8 travel mm : 5.50...5.90 : 1450 5th speed rpm : 11.00...12.00 travel mm : 1 680 750 089 Test lines GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 : 8.00x2.50x600 x Length mm rpm : 1220 Speed Rack travel in mm : 9.20...11.80 (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. per values 1st version rpm : 700 Speed BEGINNING OF DELIVERY Aneroid pressure h: 1000 Test pressure, bar: 25...27 : 148.0...150.0 Del.quantity

1000 : (145.0...153.0)

cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 296...304 Testing: 1st rack travel in: 9.50 rpm : 1125...1135 Speed 2nd rack travel in: 4.00 rpm : 1210...1240 Speed 4th rack travel in: 1350 Speed npm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 243...251 Testing: Speed : 200 rpm Minimum rack trave: 6.80 Speed : 275 rpm Rack travel in mm : 5.30...5.50 CONSTANT REGULATION rpm : 340...440 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 non Pressure hPa : 1000 Rack travel m : 10.50...10.60 Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 8.90...9.20 2nd pressure hPa : 240 Rack travel in m: 10.10...10.20 3rd pressure hPa : 130 Rack travel in m: 9.40...9.60

Del.quantity cm3/: 144.0...150.0 1000 s: (141.0...153.0) Aneroid pressure h: rpm : 500 Speed Del.quaritity cm3/: 101.0...103.0 1000 s: (98.0...106.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.50 Speed riom : 1125...1135 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 160.0...190.0 1000 s: (156.0...194.0) LOW IDLE Speed rpm : 275 Rack travel in mm : 5.20...5.60 Del.quantity cm3/ : 22.0...26.0 1000 s: (19.0...29.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Speed

START CUT-OUT

1st version

1/min : 210 (230)

rpm : 1050

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1000

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.20...4.30 Prestroke mm : (4.15...4.35) Rack travel in mm : 18.00...21.00 Firing order : 1-5-3-6-2-4 Note remarks Firing order : RVI 9,8 s : 24.07.92 Test sheet Edition Replaces : 10.91 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 830 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6P120A320RS3290 EP type number : 0 412 026 751 rpm : 500 1st speed Governor Governor design. : RQ275/950PA999-4 Rack travel in mm : 12.80...12.90 : 0 421 801 612 Governer no. Del.quantity cm3/: 13.9...14.1 Customer-spec. information Customer : RVI 100 s: (13.6...14.4) Engine : MIDR/PR062045 Spread cm3 : 0.51st version kW : 151.0 100 s: (0.9) : 1900 Rated speed 2nd speed rpm : 250.0 TEST BENCH REQUIREMENTS Rack travel in mm: 4.8...5.2 Del.quantity cm3/: 2.0...2.6 Test oil 100 s: (1.7...2.9) inlet temp. °C : 38...42 cm3 : 0.8Spread 100 s: (0.8) Overflow valve : 1 417 413 025 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -2 rpm : 600 Speed Test nozzle holder Rack travel in mm: 19.20...20.80 assembly : 1 688 901 105 FULL LOAD DELIV. AT FULL LOAD STOP Opening pressure, bar : 207...210 1st version rpm : 500 Speed Orifice plate Aneroid pressure h: 1000 diameter mm : 0,8 : 139.0...141.0 Del.quantity 1000 : (136.0...144.0) : 5.00 Spread cm3 Test lines : 1 680 750 089 1000 : (9.00) Outside diameter RATED SPEED x Wall thickness : 8.00x2.50x600 x Length mm 1st version (A) Injection pump setting values Setting point: Insp. values in parentheses Speed : 600 rpm Set equal delivery quant. Rack travel in mm: 20.0 per values Testing: BEGINNING OF DELIVERY 1st rack travel in: 11.80 Test pressure, bar: 25...27 rpm : 1010...1025 Speed

2nd rack travel in: 4.00

Speed rpm : 1095...1125

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Rack travel in mm: 5.0

Testing:

: 200 Speed rpm Minimum rack trave: 6.05 : 250 Speed rpm

Rack travel in mm : 1,95...5.15 Rack travel in mm : 2.00 Speed rpm : 315...355

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 500

Rack travel in m: 13.20...13.30

2nd speed rpm : 950

Rack travel in m: 13.10...13.30

Ameroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 1000

: 12.80...12.90 Rack travel mm

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : -

Rack travel in m: 10.95...10.90

2nd pressure hPa : 160

Rack travel in m: 11.20...11.30

3rd pressure hPa : 320

Rack travel in m: 12.10...12.40

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 : 950 Speed rpm

De'.quantity cm3/: 153.0...159.0

1000 s: (150.0...162.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 99.0...101.0 1000 s: (96.0...104.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1010...1025 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...170.0

1000 s: (136.0...174.0)

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 4.80....5.20

Del.quantity cm3/: 20.0...26.0 1000 s: (17.0...29.0)

Spread cm3 : 8.00

1000 s: (8.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

**APPLICATION** 

Omn bus

Note remarks

Test sheet : IHC

Edition : 19.11.93 Replaces : 06.93 Test oil : ISO-4113

Combination no. : 0 402 046 839

Injection pump

Pump designation : PES6P100A320LS3306

EP type number : 0 412 006 703

Governor

Governor design. : RQV350...1200PA1042

-1K

Governer no. : 0 421 815 322

Customer-spec. information Customer : NAVISTAR

Engine : DTA-466

1st version kW : 172.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 076

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 240...260

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05

: (2.90...3.10)

Rack travel in mm : 14.00...17.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 800

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 16.3...16.5

100 s: (16.1...16.7)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 350.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 1.5...1.9

100 s: (1.3...2.2)

Spread cm3 : 0.4100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.80...2.00

2nd speed rpm : 500

travel mm : 3.50...3.90 rpm : 800 3rd speed

travel mm : 6.20...6.60

4th speed rpm : 1250 : 9.30...9.50 travel mm

: 1400 5th speed magn

travel mm : 10.50...11.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1440 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 800 Aneroid pressure h: 1200 : 163.0...165.0 Del.quantity 1000 : (161.0...167.0) : 8.00 Spread cm3 1000 : (12.00) RATED SPEED 1st version Control lever position degrees: 116...124 Testing: 1st rack travel in: 13.50 rpm : 1260...1290 Speed 2nd rack travel in: 4.00 rpm : 1445...1455 Speed 4th rack travel in: 1550 Speed rom : 0.00...1.00LOW IDLE 1 Control lever position degrees: 74...82 Testing: Speed rpm Minimum rack trave: 7.70 rpm Rack travel in mm : 5.90...6.10 CONSTANT REGULATION Speed rpm : 350...520 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 800 Rack travel in m: 14.20...14.30 nd speed rpm : 1200 Rack travel in m: 14.50...14.70 2nd speed : 650 3rd speed rpm Rack travel in m: 13.30...13.70 Ameroid/Altitude Compensator Test 1st version Satting Speed rom : 1200 hPa : 1200 Pressure Rack travel mm : 14.50...14.70 Measurement Speed 1/min: 1200

Rack travel in m: 10.30...10.70 2nd pressure hPa : 310 Rack travel in m: 11.20...11.30 3rd pressure hPa : 655 Rack travel in m: 13.00...13.40 START CUT-OUT Speed 1/min: 280 (290) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 1200 Del.quantity cm3/: 168.0...172.0 1000 s: (166.0...174.0) Spread cm3: 8.00 1000 s: (12.0) Aneroid pressure h: rpm : 800 Speed Del.quantity cm3/: 70.5...74.5 1000 s: (68.5...76.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.50 rpm : 1260...1290 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 120.0...160.0 1000 s: (115.0...165.0) Rack travel in mm: 20.00...21.00 LOW IDLE Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/: 15.5...19.5
1000 s: (13.0...22.0) cm3 : 4.00Spread 1000 s: (6.50) Remarks: : NAVISTAR #1819914c91 Bow dimension: Sliding-sleeve position = 37.0 mm

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

L01

1st pressure hPa : -

Delivery-valve spring pre-tension = 6.30...6.40 mm.
Permissible alteration from 6.00...6.70 mm

Note remarks

Test sheet : NAV Edition : 09.12.93

Replaces : -

Test oi: : 1SO-4113

Combination no. : 0 402 046 843

Injection pump

Pump designation : PES6P100A320LS3306

EP type number : 0 412 006 703

Governor

Governor design: : RQV350...1200PA1042

-2K

Governer no. : 0 421 815 326

Customer—spec. information Customer : NAVISTAR

Engine : DTA-466

1st version kW : 156.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 076

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 240...260

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

 $\times$  Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05

: (2.90...3.10) Rack travel in mm : 14.00...17.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 800

Rack travel in mm: 13.60...13.70

Del.quantity cm3/: 15.2...15.4

100 s: (15.0...15.6)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 350.0 Rack travel in mm : 6.0...6.2 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.4 100 s: (0.6)

(B) Setting of injection push with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.80...2.00

2nd speed rpm : 500

travel mm : 3.50...3.90 3rd speed rpm : 800

travel mm : 6.20...6.60

4th speed rpm : 1250 travel mm : 9.30...9.50

5th speed rpm: 1400

travel mm : 10.50...11.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm: 1440

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 9.80...10.20 1st version 2nd pressure hPa : 255 rpm : 800 Speed Rack travel in m: 11.40...11.50 3rd pressure hPa : 550 Rack travel in m: 13.00...13.40 Aneroid pressure h: 1200 : 152.0...154.0 Del.quantity 1000 : (150.0...156.0) : 8.00 Spread cm3 START CUT-CUT : (12.00)1000 1/min: 280 (290) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 116...124 1st version Aneroid pressure h: 1200 Testing: : 1200 Speed rpm 1st rack travel in: 12.90 Del.quantity cm3/: 157.5...161.5 rpm : 1260...1290 1000 s: (155.5...163.5) Speed 2nd rack travel in: 4.00 cm3 : 8.00Spread Speed rpm : 1440...1450 1000 s: (12.0) 4th rack travel in: 1550 Aneroid pressure h: rpm : 0.00...1.00Speed rpm : 800 Speed Del.quantity cm3/: 68.5...72.5 LOW IDLE 1 1000 s: (66.5...74.5) Control lever position degrees: 71...79 BREAKAWAY Testina: Speed : 275 rom 1st version Minimum rack trave: 7.70 1mm rack travel less than : 350 rom Rack travel in mm : 6.00...6.20 full load rack tr: 12.90 Speed rpm : 1260...1290 CONSTANT REGULATION rpm : 350...520 Speed STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm :? Speed : 100 rpm Torque control curve - 1st version Del.quantity cm3/: 120.0...160.0 1000 s: (115.0...165.0) Rack travel in mm : 20.00...21.00 ist speed rpm : 800 Rack travel in m: 13.60...13.70 rpm : 1200 2nd speed Rack travel in m: 13.90...14.10 LOW IDLE 3rd speed : 600 rpm Rack travel in m: 12.80...13.20 Speed rpm : 350 Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5) Aneroid/Altitude Compensator Test Spread cm3 : 4.00 1000 s: (6.50) 1st version Setting Remarks: Speed rom : 1200 : NAVISTAR #1819919091 Pressure hPa : 1200 Rack travel mm : 13.90...14.10 Bow dimension: Sliding-sleeve position = 37.0 mmDelivery-valve spring pre-tension = 6.30...6.40 mm. Measurement Speed  $1/\min : 1200$ Permissible alteration from 6.00...6.70

L04

1st pressure hPa : -

Note remarks

Test sheet : NAV Edition : 09.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 046 844

Injection pump

Pump designation : PES6P100A320LS3306 EP type number : 0 412 006 703

Governor

Governor design. : RQV350...1200PA1042

-3K

Governer no. : 0 421 815 327

Customer-spec, information Customer : NAVISTAR

Engine : DTA-466

1st version kW : 145.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 2 417 413 076

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 240...260

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 2.95...3.05 Prestroke mm

: (2.90...3,10) Rack travel in mm : 14.00...17.00

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 800

Rack travel in mm: 12.70...12.80

Del.quantity cm3/: 13.4...13.6

100 s: (13.2...13.8)

Spread cm3 : 0.8

100 s: (1.2)

rpm : 350.02nd speed Rack travel in mm: 5.8...6.0 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

Spread cm3 : 0.4100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 1.80...2.00 travel mm

2nd speed rpm : 500

travel mm : 3.50...3.90

3rd speed : 800 rpm travel mm

: 6.20...6.60

4th speed rpm : 1250

travel mm : 9.30...9.50

5th speed rpm : 1400

travel mm : 10.50...11.00

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1440

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 9.80...10.20 1st version 2nd pressure hPa : 270 Rack travel in m: 11.00...11.10 3rd pressure hPa : 560 Rack travel in m: 12.50...12.90 rpm : 800 Speed Aneroid pressure h: 1200 : 134.0...136.0 Del.quantity 1000 : (132.0...138.0) : 8.00 Spread ത്ര START CUT-OUT 1000 : (12.00) Speed 1/min : 280 (290) RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 114...122 1st version Aneroid pressure h: 1200 Testing: rpm : 1200 Del.quantity cm3/: 150.0...154.0 1000 s: (148.0...156.0) Spread cm3: 8.00 1st rack travel in: 12.70 rpm : 1240...1270 Speed 2nd rack travel in: 4.00 rpm : 1420...1430 Speed 1000 s: (12.0) 4th rack travel in: 1553 Aneroid pressure h: -Speed rpm : 1200 Del.quantity cm3/ : 73.5...77.5 rpm : 0.00...1.00Speed LOW IDLE 1 1000 s: (71.5...79.5) Control lever position degrees: 71...79 **BREAKAWAY** Testing: Speed rpm 1st version Minimum rack trave: 7.50 1mm rack travel less than : 350 rom Rack travel in mm : 5.80...6.00 full load rack tr: 12.70 Speed rpm : 1240...1260 CONSTANT REGULATION Speed rpm : 350...520 STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm :? Speed rpm : 100 Del.quantity\_cm3/: 120.0...160.0 Torque control curve - 1st version : 800 1st speed rpm 1000 s: (115.0...165.0) Rack travel in m: 12.70...12.80 Rack travel in mm : 20.00...21.00 2nd speed rpm : 1200 Rack travel in m: 13.40...13.60 LOW IDLE 3rd speed rpm : 650 Rack travel in m: 12.10...12.30 rpm : 350 Speed Rack travel in mm : 5.80...6.00 Aneroid/Altitude Del.guantity cm3/: 18.0...22.0 Compensator Test 1000 s: (15.5...24.5) Spread cm3 : 4.001000 s: (6.50) 1st version Settina Remarks: : 1200 Speed rom : NAVISTAR #1819919091 hPa : 1200 Pressure Rack travel mm : 13.40...13.60 Bow dimension: Sliding-sleeve position = 37.0 mm Measurement Delivery—valve spring pre-tension = 6.30...6.40 mm. 1/min: 1200 Speed Permissible alteration from 6.00...6.70 1st pressure hPa : -

## Note remarks

Test sheet : IHC Edition : 19.11.93 Replaces : 06.93 Test oil : ISO-4113

Combination no. : 0 402 046 845

Injection pump

Pump designation : PES6P100A320LS3309 EP type number : 0 412 006 704

Governor

: RQV350...1300PA1042-Governor design.

6K

: 0 421 815 330 Governer no.

Customer-spec. information Customer : NAVISTAR

Erraine : DTA-408

1st version kW : 142.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 058

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 240...260

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1,50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 14.00...17.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.10...12.20

Del.guantity cm3/: 13.2...13.4

100 s: (13.0...13.6)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 350.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/: 1.4...1.8

100 s: (1.2...2.1)

cm3 : 0.4Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.60...2.00 2nd speed rpm : 500

travel mm : 3.80...4.20

3rd speed rpm : 800

: 5.80...6.20 travel mm

rpm : 1300 4th speed travel mm : 8.90...9.10

5th speed rpm : 1500

: 10.40...10.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1500

Rack travel in mm : 8.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rom : 900 Aneroid pressure h: 1200 : 132.5...134.5 Del.quantity 1000 : (130.5...136.5) : 8.00 Spread cm3 1000 : (12.00)RATED SPEED 1st version Control lever position degrees: 112...120 Testing: 1st rack travel in: 11.40 rpm : 1390...1420 Speed 2nd rack travel in: 4.00 rpm : 1530...1540 Speed 4th rack travel in: 1650 Speed rom : 0.00...1.00LOW IDLE 1 Control lever position degrees: 71...79 Testing: Speed COM Minimum rack trave: 6.70 Speed rpm : 350 Rack travel in mm : 5.10...5.30 CONSTANT REGULATION rpm : 350...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 12.10...12.20 rpm : 1300 2nd speed Rack travel in m: 12.40...12.60 rpm : 700 3rd speed Rack travel in m: 11.40...11.80 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 1300 hPa : 1200 Pressure Rack travel mm : 12.40...12.60 Measurement Speed 1/min: 1300

Rack travel in m: 8.40...8.80 2nd pressure hPa : 270 Rack travel in m: 9.60...9.70 3rd pressure hPa : 570 Rack travel in m: 11.20...11.60 START CUT-OUT 1/min : 280 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 1300 Speed Del.quantity cm3/: 139.0...143.0 1000 s: (137.0...145.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 900 Del.quantity cm3/: 66.0...70.0 1000 s: (64.0...72.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.40 Speed rpm : 1390...1420 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 120.0...160.0 1000 s: (115.0...165.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 14.5...18.5 1000 s: (12.0...21.0) Spread cm3 : 4.001000 s: (6.50) Remarks: : NAVISTAR #1819922c91

Bow dimension:

start of delivery

Sliding-sleeve position = 37.0 mm

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

1st pressure hPa : -

Delivery-valve spring pre-tension = 6.30...6.40 mm.
Permissible alteration from 6.00...6.70 mm

Note remarks

Test sheet : NAV

: 14,10.93 Edition : 08.93 Replaces

Test oil : ISO-4113

Combination no. : 0 402 046 846

Injection pump

Pump designation : PES6P100A320LS3309

EP type number : 0 412 906 704

Governor

Governor design. : RQV350...1300PA1042

-7K

Governer no. : 0 421 815 331

Customer-spec. information Customer : NAVISTAR

Engine : DTA-408

1st version kW : 130.5 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 G58

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 240...260

Test nozzle holder

: 1 688 901 101 assembly

Openina |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05

: (2.90...3.10)

Rack travel in mm : 14.00...17.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-130-240-30G

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.8

100 s: (1.2)

rpm : 350.0 2nd speed Rack travel in mm: 5.1...5.3 Del.quantity cm3/: 1.4...1.8

100 s: (1.2...2.1)

Spread cm3 : 0.4100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 1.60...2.00 travel mm

: 500 2nd speed rom

: 3.80...4.20 travel mm

3rd speed : 800 rom

: 5.80...6.20 travel mm

rpm : 1300 4th speed

travel mm : 8.90...9.10

: 1500 5th speed ngn.

: 10.40...10.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1500 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 8.80...9.20 2nd pressure hPa : 270 1st version rpm : 900 Speed Rack travel in m: 9.80...9.90 Aneroid pressure h: 1200 3rd pressure hPa : 580 : 100.0...102.0 Del.quantity Rack travel in m: 11.10...11.50 1000 : (98.0...104.0) : 8.00 Spread cm3 START CUT-OUT 1000 : (12,00) Speed 1/min : 280 (290) RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 116...124 1st version Aneroid pressure h: 1200 : 1300 Testing: rpm Del.quantity cm3/: 122.0...126.0 1000 s: (120.0...128.0) 1st rack travel in: 10.70 Speed rpm : 1360...1390 2nd rack travel in: 4.00 Spread cm3 : 8.00rpm : 1500...1510 1000 s: (12.0) 4th rack travel in: 1650 Aneroid pressure h: -Speed rpm : 900 Del.quantity cm3/ : 69.0...73.0 1000 s: (67.0...75.0) rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 71...79 BREAKAWAY Testing: Speed rpm : 275 1st version Minimum rack trave: 6.20 1mm rack travel less than : 350 riom Rack travel in mm : 5.10...5.30 full load rack tr: 10.70 Speed rpm : 1360...1390 CONSTANT REGULATION Speed rpm : 350...520 STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm :? Speed : 100 rpm Torque control curve - 1st version Del.quantity cm3/: 120.0...160.0 1000 s: (115.0...165.0) rpm : 900 1st speed Rack travel in m: 11.00...11.10 Rack travel in mm : 20.00...21.00 2nd speed rpm : 1300 Rack travel in m: 11.70...11.90 3rd speed rpm : 700 LOW IDLE Rack travel in m: 10.30...10.70 Speed rpm : 350 Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 14.5...18.5 1000 s: (12.0...21.0) Spread cm3: 4.00 Aneroid/Altitude Compensator Test 1000 s: (6.50) 1st version Setting Remarks: Speed : 1300 וחכורו : NAVISTAR #1819923c91 Pressure hPa : 1200 Rack travel mm : 11.70...11.90 Bow dimension: Sliding-sleeve position = 37.0 mm Measurement Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 Speed 1/min: 1300 start of delivery

1st pressure hPa : -

Delivery-valve spring pre-tension = 6.30...6.40 mm.
Permissible alteration from 6.00...6.70 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet Edition

: MAN : 07.12.93

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 046 849

Injection pump

Pump designation : PES6P120A720LS3229-1

EP type number

: 0 412 026 762

Governor

Governor design. : RQV300...900PA1071

Governer no.

: 0 421 814 056

Customer-spec. information Customer

: MAN

Engine

: D 2866 TE

1st version kW

Rated speed

: 191.0 : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 019

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 075

Outside diameter x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.80...3.90

: (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order

: 6-2-4-1-5-3

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm: 900

Rack travel in mm : 9.20...9.30

Del.quantity cm3/: 17.5...17.7

100 s: (17.2...18.0)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 4.3...4.7 Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.1)

Spread

cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 300

travel mm

: 1.12...1.32

2nd speed

rpm : 410

travel mm

: 2.36...2.76

3rd speed

rpm : 653

travel mm

: 4.51...4.91

4th speed

rpm : 959 : 8.24...8.54

travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1045

Rack travel in mm : 6.90...9.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed Del.quantity

rpm : 900

: 175.0...177.0

1000 : (172.0...180.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 49...57

Testing:

1st rack travel in: 8.25 rom: 940...950 Speed 2nd rack travel in: 4.00 rpm : 995...1025 Speed

4th rack travel in: 1150 rpm : 0.00...1.00

Speed

LOW IDLE 1 Control lever

position degrees: 78...86

Testing:

: 200 Speed rom Minimum rack trave: 6.90 : 300 Speed rpm

Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

rpm : 300...400 Speed

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 500 rpm

Del.quantity cm3/: 182.0...188.0 1000 s: (179.0...191.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.25 Speed rpm : 940...950

STARTING FUEL DELIVERY

: 100 Speed rpm

De'.quantity cm3/: 200.0...220.0

1000 s: (196.0...224.0)

Remarks:

: MAN-NR. 3-7011/3

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks Firing order Test sheet : RVI Edition : 09.12.93 Replaces : ISO-4113 Test oil Phasing Combination no. : 0 402 046 850 Tolerance + - ° Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A320RS3320 EP type number : 0 412 026 763 BASIC SETTING Governor Governor design. : RQV275...1000PA995-2 1st speed Governer no. : Q 421 813 940 Customer-spec. information Customer : RVI Engine : MIDR 063540 M/3 1st version kW : 236.0 Spread Rated speed : 2000 TEST BENCH REQUIREMENTS 2nd speed Test oil inlet temp. °C : 38...42 Overflow valve Spread : 1 417 413 025 Inlet press., bar: 1.50 with governor Test nozzle holder assembly : 1 688 901 105 GUIDE SLEEVE TRAVEL 1st speed Opening travel mm pressure, bar : 207...210 2nd speed travel mm Orifice plate 3rd speed diameter mm : 0,8 travel mm 4th speed rom travel mm Test Lines : 1 680 750 089 5th speed travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION

: 3.35...3.45 : (3.30...3.50) Rack travel in mm : 18.00...21.00 : 1-5-3-6-2-4 : 0-60-120-180-240-300 : 0.50 (0.75) rpm : 600Rack travel in mm : 12.40,...12.50 Del.quantity cm3/: 23.9...24.1 100 s: (23.6...24.4) cm3 : 0.5100 s: (0.9) rpm : 300.0 Rack travel in mm : 4.75...4.95 Del.quantity cm3/ : 2.3...2.7 100 s: (2.0...3.0) cm3 : 0.8100 s: (1.2) (B) Setting of injection pump rpm : 300 : 1.56...1.76 rpm : 343 : 2.13...2.53 rpm : 393 : 2.79...3.19 : 490 : 3.61...4.01 rpm : 1086 : 8.36...8.56 Control-Lever position Degree: -1 rpm: 1180 Speed Rack travel in mm : 10.10...12.70 FULL LOAD DELIV. AT FULL LOAD STOP

Test pressure, bar: 25...27

Speed rpm : 600 Aneroid pressure h: 1000 Del.quantity : 239.0...241.0 1000 : (236.0...244.0) : 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 299...307

Testing:

1st rack travel in: 11.45

rpm : 1065...1075 Speed

2nd rack travel in: 4.00

rpm : 1175...1205 Speed

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 245...253

Testing:

Speed : 200 rpm Minimum rack trave: 6.95 : 300 rpm

Rack travel in mm : 4.85...5.05

CONSTANT REGULATION

Speed rpm : 285...395

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rom Pressure hPa : 1000

Rack travel mm : 12.40...12.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.75...9.95

2nd pressure hPa : 280

Rack travel in m: 11.55...11.65

3rd pressure hPa : 160

Rack travel in m: 10.55...10.75

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 1000 Speed

Del.quantity cm3/: 227.0...233.0

1000 s: (224.0...236.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 143.0...145.0 1000 s: (140.0...148.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.45

Speed rpm : 1065...1075

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 145.0...175.0

1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.90...5.30 Del.quantity cm3/: 23.0...27.0

1000 s: (20.0...30.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.20...4.30 Prestroke mm : (4.15...4.35) Note remarks Rack travel in mm : 18.00...21.00 : 1-5-3-6-2-4 Firing order Test sheet : RVI Edition : 09.12.93 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Compination no. : 0 402 046 851 : 0.30 (0.75) Tolerance + - ° Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A320RS3290-1 EP type number : 0 412 026 765 BASIC SETTING Governor Governor design. : RQ300/1050PA999-5 1st speed rpm: 700 : 0 421 801 663 Governer no. Rack travel in mm : 12.75...12.85 Customer-spec. information Customer : RVI Del.quantity cm3/ : 15.3...15.5 Engine : MIHR 062045 B3 100 s: (115.0...15.8 1st version kW : 152.0 Spread cm3 : 0.5: 2100 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 275.0 Rack travel in mm : 4.7...5.1 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 1.9...2.3 100 s: (1.6...2.6) Overflow valve Spread cm3 : 0.8: 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 105 assembly rpm : 700 Rack travel in mm : 19.20...20.80 Opening : 207...210 pressure, bar FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rom : 700Aneroid pressure h: 1000 : 153.0...155.0 Del.quantity 1000 : (150.0...158.0) Test lines : 1 680 750 089 Spread : 5.00 cm3 Outside diameter 1000 : (9.00)x Wall thickness x Length mm : 8.00x2.50x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values \_\_\_\_ : 600 Speed rpm Rack travel in mm: 20.0 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing:

1st rack travel in: 11.80

rpm : 1115...1125 Speed 2nd rack travel in: 4.00 rpm : 1235...1265 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring rpm : 275 Rack travel in mm: 4.90 Testing: Speed rpm : 200 Minimum rack trave: 6.00 Speed rpm : 275 Rack travel in mm : 4.80...5.00 Rack travel in mm : 2.00 Speed rom : 440...480 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : 1000 Rack travel mm : 12.75...12.85 Measurement  $1/\min : 500$ Speed 1st pressure hPa :-Rack travel in m: 11.80...12.00 2nd pressure hPa : 120 Rack travel in m: 12.10...12.20 3rd pressure hPa : 180 Rack travel in m: 12.40...12.60 START CUT-OUT 1/min: 195 (215) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 1050 Del.quantity cm3/: 148.0...154.0 1000 s: (145.0...157.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 121.0...123.0 1000 s: (118.0...126.0)

1mm rack travel less than full load rack tr: 11.80 Speed rpm : 1115...1125 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...160.0 1000 s: (136.0...174.0) LOW IDLE rpm : 275 Speed Rack travel in mm : 4.80 ... 5.00 Del.quantity cm3/: 19.0...23.0 1000 s: (67.0...26.0) Spread cm3 : 8.001000 s: (12.0) Rémarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery **APPLICATION** Omnibus

**BP.EAKAWAY** 

1st version

L20

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : NAV : 14.10.93 Edition Replaces : 08.93 Test oil : ISO-4113 Combination no. : 0 402 046 852 Injection pump Pump designation : PES6P100A320LS3323 EP type number : 0 412 006 708 Governor Governor design. : RQV350...1300PA1087 : 0 421 814 064 Governer no. Customer-spec. information Customer : NAVISTAR : DTA-408 Engine 1st version kW : 112.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 058 Inlet press., bar: 2.80 Overflow quantity min. 1/h: 240...260 Test nozzle holder assembly : 1 688 901 101 Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6

: 1 680 750 015

: 6.00x1.50x600

Test pressure, bar: 22...24 : 2.95...3.05 Prestroke mm : (2.90...3.10) Rack travel in mm : 14.00...17.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance  $+ - ^{\circ} : 0.30 (0.75)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rom: 1300 Rack travel in mm : 14.30...14.40 Del.quantity cm3/: 13.1...13.3 100 s: (12.9...13.5) cm3 : 0.8 Spread 100 s: (1.2) rpm : 350.02nd speed Rack travel in mm: 6.2...6.4 Del.quantity cm3/: 1.5...1.9 100 s: (1.3...2.2) Spread cm3 : 0.4100 s: (0.6) FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1300 Speed Aneroid pressure h: 1200 Del.quantity : 131.0...133.0 1000 : (129.0...135.0) : 8.00 cm3 Spread 1000 : (12.00) RATED SPEED 1st version Control lever position degrees: 114...126 Testing: 1st rack travel in: 13.30 rpm : 1375...1405 Speed 2nd rack travel in: 4.00 rpm : 1555...1565 Speed 4th rack travel in: 1650 Speed rpm : 0.00...1.00

BEGINNING OF DELIVERY

Test lines

Outside diameter

x Wall thickness x Length mm

per values \_\_\_

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant. LOW IDLE 1 Control lever

position degrees: 66...78

Testina:

Speed : 275 rpm Minimum rack trave: 8.00 : 350 Speed CDM

Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

rpm : 350...520Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 800 COM Pressure hPa : 1300

: 14.30...14.40 Rack travel mm

Measurement

Speed 1/min: 800

1st pressure hPa : -

Rack travel in m: 9.80...10.20

2nd pressure hPa : 285

Rack travel in m: 11.10...11.20

3rd pressure hPa : 660

Rack travel in m: 13.10...13.50

START CUT-OUT

1/min : 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 800

Del.quantity cm3/: 65.0...69.0

1000 s: (63.0...71.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 13.30

Speed rpm : 1375...1405

STARTING FUEL DELIVERY

: 100 Speed rpm

L22

Del.quantity cm3/: 120.0...160.0 1000 s: (115.0...165.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm

Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 14.5...18.5 1000 s: (12.0...21.0)

cm3 : 4.00 Spread

1000 s: (6.50)

Remarks:

: NAVISTAR #1821958091

Bow dimension:

Sliding-sleeve position = 37.0 mm Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Delivery-valve spring pre-tension = 6.30...6.40 mm.

Permissible alteration from 6.00...6.70

BOSCH INJ. PUMP TEST SPECIFICATIONS : 1-5-3-6-2-4 Firing order Note remarks Test sheet : RAB Phasima : 0-60-120-180-240-300 : 13.12.93 Edition Replaces Tolerance + - ° : 0.30 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 402 046 853 BASIC SETTING Injection pump Pump designation : PE6P120A320RS3321 1st speed rpm : 600 EP type number : 0 412 026 766 Governor Rack travel in mm : 13.30...13.40 Governor design. : RQ275...950PA1085 Governer no. : 0 421 801 691 Del.quantity cm3/: 19.6...19.8 Customer-spec. information 100 s: (19.3...20.1) : RABA Customer Spread cm3 : 0.5: b10-uts184 Engine 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 275.0 Test oil Rack travel in mm : 8.10...8.30 : 38...42 Del.quantity cm3/: 1.9...2.5 inlet temp. °C 100 s: (2.0...3.0) Overflow valve cm3 : 0.8 Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -1 : 1 688 901 105 assembly rpm : 500 Rack travel in mm: 19.20...20.80 Opening pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version Speed diameter mm : 0,8 rpm : 600 Aneroid pressure h: 900 Del.quantity : 190.0....201.0) Test lines : 1 680 750 089 cm3 : 5.00 Spread Outside diameter 1000 : (9.00) x Wall thickness : 8.00x2.50x600 x Length mm RATED SPEED 1st version

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

L23

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm : (4.35...4.55)

Rack travel in mm : 18.00...21.00 Speed rpm : 1080...2010

Setting point:

Testing:

Speed

: 500

rpm : 1007...1017

rpm Rack travel in mm: 20.5

1st rack travel in: 12.35

2nd rack travel in: 4.00

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275 Rack travel in mm: 5.00

Testina:

Speed rpm: 175 Minimum rack trave: 7.40 nom : 275

Rack travel in mm : 4.70...5.30

CONSTANT REGULATION

rpm : 200...350 Speed

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 hPa : 900 Speed Pressure

Rack travel mm : 13.30...13.40

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 11.10...11.50

2nd pressure hPa : 450

Rack travel in m: 12.75...12.85

3rd pressure hPa : 350

Rack travel in m: 11.70...11.90

START CUT-OUT

1/min : 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 950

Del.quantity cm3/: 191.0...197.0

1000 s: (188.0...200.0)

Aneroid pressure h: -

Speed rpm : 500 Dal.quantity cm3/ : 114.0...118.0

1000 s: (112.0,...120.0)

BRIAKAWAY

1st version 1mm rack travel less than full load rack tr: 12.35

rpm : 1007...1017 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 134.0...174.0

1000 s: (130.0...178.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI

Edition : 13.12.93

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 076 060

Injection pump

Pump designation : PES6P110A320RS534 SP type number : 0 412 016 077

Governor

Governor design. : RSV450...1050P1A572

Governer no. **:** 0 421 833 428

Customer-spec. information

Customer : IVECO-UNIC

Engine : 8365,25,533

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.10...10.20

Del.guantity cm3/: 10.7...10.8

100 s: (10.4...11.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 450.0 2nd speed Rack travel in mm: 4.8...5.2 Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.4)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 900

Del.quantity : 107.0...112.0)

: 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 104...112

Testing:

1st rack travel in: 9.00

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1115...1145 Speed 3rd rack travel in: 4.00

rpm : 1130...1160 Speed

4th rack travel in: 1300

rpm : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 76...84

Setting point w/out bumper spring rpm : 450 Speed

Rack travel in mm: 4.5 : 450 Speed rpm

Rack travel in mm : 4.90...5.10

Rack travel in mm: 2.00

Speed rpm : 530...590

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rom Pressure hPa : 900

Rack travel mm : 10.00...10.10

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.20...9.40

2nd pressure hPa : 450

Rack travel in m: 9.86...9.96

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 550 Speed

Del.quantity cm3/: 120.0...124.0 1000 s: (117.0...127.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 103.0...105.0

1000 s: (100.0...108.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.00

rpm : 1090...1100 Spred |

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 185.0...215.0

1000 s: (181.0...219.0)

Remarks:

: NAVISTAR #1820269091

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.35...4.45 Prestroke mm : (4.30...4.50) Note memarks Rack travel in mm : 9.00...12.00 : 1- 12- 9- 5- 3- 8-Firing order Test sheet : BAO 11-4-2-10-7-6-Edition : 13.12.93 Replaces Test oil : ISO-4113 Phasing : 0-45-60-105-120-165-Combination no. : 0 402 630 812 180-225-240-285-300-Phasina : 345 Injection pump Tolerance + - ° : 0.30 (0.75)Pump designation : PE12P12OA120LS7306 : 0 412 620 839 EP type number Time to cyl. no. : 12 Governor Governor design.: RQV325...1500PA930 BASIC SETTING Governer no. : 0 421 813 804 rpm: 1500 1st speed Customer-spec. information Customer : BAUDOUIN Rack travel in mm : 12.70...12.80 : 12 F 120 SRE Engine Del.quantity cm3/: 18.6...18.8 : 618.0 1st version kW 100 s: (18.3...19.1) Rated speed : 3000 Spread cm3 : 0.5TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil inlet temp. °C : 38...42 rpm : 500 2nd speed Rack travel in mm : 10.65...10.85 Overflow valve Del.quantity cm3/: 12.7...13.1 100 s: (12.4...13.4) : 1 417 413 025 rpm : 325 3rd speed Inlet press., bar: 1.50 Rack travel in mm : 6.80...7.20 Del.quantity cm3/ : 2.5...3.5 \* Test nozzle holder 100 s: (-) : 1 688 901 019 assembly cm3 : -Spread 100 s: (-) Opening pressure, bar : 207...210 (B) Setting of injection pump with governor Orifice plate : 0,8 diameter mm GUIDE SLEEVE TRAVEL rpm : 325 1st speed : 1.04...1.24 travel mm Test lines : 1 680 750 075 2nd speed rpm : 381 : 1.68...2.08 travel mm Outside diameter 3rd speed rpm : 431 x Wall thickness : 2.12...2.52 travel mm : 8.00x2.50x1000 x Length mm rpm : 899 4th speed : 3.68...4.08 travel mm (A) Injection pump setting values rpm : 1555 5th speed Insp. values in parentheses : 8.50...8.70 travel mm Set equal delivery quant. per values GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1700 Rack travel in mm : 5.00...8.00

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

FULL LOAD DELIV. AT FULL LOAD STOP  1st version Speed rpm: 1500 Aneroid pressure h: 900 Del.quantity: 186.0188.0 1000: (183.0191.0) Spread cm3: 5.00 1000: (9.00)	1st version Aneroid pressure h: - Speed rpm : 500 Del.quantity cm3/ : 127.0131.0 1000 s: (124.0134.0)
RATED SPEED	BREAKAWAY
	1st version 1mm rack travel less than
1st version Control lever position degrees: 119127	full load rack tr: 11.70 Speed rpm : 15401550
Testing: 1st rack travel in: 11.70 Speed rpm : 15401550 2nd rack travel in: 4.00 Speed rpm : 16551685 4th rack travel in: 1400 Speed rpm : 0.001.00	HIGH IDLE  1st version Aneroid pressure h: - Speed rpm : 500 Rack travel in mm : < 7.50 Del.quantity cm3/ : 0 ** 1000 s: (-)
LOW IDLE 1 Control lever position degrees: 8492	2nd version Aneroid pressure h: - Speed rpm : 500
Testing: Speed nom : 200 Minimum rack trave: 8.50 Speed nom : 325	Speed rpm : 500 Rack travel in mm : < 8.00 Del.quantity cm3/ : < 50.0 ** 1000 s: (-)
Rack travel in mm : 6.907.10  Aneroid/Altitude Compensator Test	- 3rd version - Aneroid pressure h: - - Speed rpm : 500 - Rack travel in mm : 8.508.70 - Del.quantity cm3/ : 60.0 1000 s: (-)
1st version Setting Speed rpm : 500 Pressure hPa : 900 Rack travel mm : 12.7012.80	LOW IDLE  Speed rpm : 325 Rack travel in mm : 6.807.20 Del.quantity cm3/: 25.035.0 *
Measurement - Speed 1/min : 500 -	1000 s: (-)
1st pressure hPa : - Rack travel in m: 10.6510.85 2nd pressure hPa : 400 Rack travel in m: 12.2012.30 3rd pressure hPa : 360 Rack travel in m: 11.7511.95	Remarks:  : MAN-NR. 3-7153  - * applies to cylinders 4, 5, 6, 8, 10 and 12 - ** applies for cylinders 1, 2, 3, 7, 9 and 11
STORT CUT-OUT	APPLICATION
Speed 1/min: 220 (240)	Navy
FUEL DELIVERY CHARACTERISTICS	

L28

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE : 13.12.93 Edition Replaces : 21.09.92 Test oil : ISO-4113

Combination no. : 0 402 638 807

Injection pump

Pump designation : PE8P120A120LS7127 EP type number : 0 412 628 817

Governor

Governor design: RQ300/1100PA134-3 : 0 421 801 655 Governer no.

Customer-spec. information : SNF Customer

Engine : WD 815.72/73

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Tent pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1- 5- 4- 8- 6- 3-7- 2 Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 14.2...14.4

100 s: (13.9...14.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 6.4...7.0 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 600

Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 500 Aneroid pressure h: 1200

: 142.0...144.0 Del.quantity 1000 : (139.0...147.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm : 600 Rack travel in mm : 16.0

Testing:

1st rack travel in: 12.80

rpm : 1145...1161 Speed

2nd rack travel in: 4.00

Speed rpm : 1230...1260

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

: 300 מיכרו Rack travel in mm : 6.7

Testina:

Speed : 200 rpm Minimum rack trave: 8.20 : 300 Speed rpm

Rack travel in mm : 6.60...6.80

Rack travel in mm : 2.00

: 400...440 Speed man

Ameroid/Altitude Compensator Test

1st version Settina

Speed : 500 rpm Pressure hPa : 1200

: 13.80...13.90 Rack travel mm

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.40 2nd pressure hPa : 790

Rack travel in m: 12.80...12.90

3rd pressure hPa : 490

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 1100

Del.quantity cm3/: 205.0...207.0

1000 s: (202.0...210.0)

cm3 : 12.00 Spread

1000 s: (15.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.80

rom : 1145...1160 Spred

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 180.0...210.0 1000 s: (176.0...214.0)

Rack travel in mm: 15.00...16.00

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1- 5- 4- 8- 6- 3-7- 2 Note remarks Test sheet : STE : 14.12.93 Edition Phasing : 0-45-90-135-180-225-: 21.09.92 Replaces 270-315 Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 402 638 808 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PE8P120A12ULS7127 EP type number : 0 412 628 817 1st speed rpm: 500 Governor Governor design. : RQV250...1100PA785-3 Rack travel in mm : 13.80...13.90 Governer no. : 0 421 814 004 Del.guantity cm3/: 14.2...14.4 Customer-spec. information Customer : SNF 100 s: (13.9...14.7) Engine : WD 815.72/73 cm3 : 0.5Spread TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil 2nd speed rpm : 250.0 inlet temp. °C : 38...42 Rack travel in mm: 6.7...7.1 Del.guantity cm3/: 1.4...2.0 Overflow valve 100 s: (1.1...2.3) : 1 417 413 025 Spread cm3 : 0.8100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump Test nozzle holder with governor : 1 688 901 105 assembly GUIDE SLEEVE TRAVEL Openina 1st speed rpm : 250 pressure, bar : 207...210 travel mm : 0.95...1.35 2nd speed rpm : 355 Orifice plate : 1.70...2.20 travel mm diameter mm : 0,8 3rd speed rpm : 410 travel mm : 2.20...2.70 4th speed rpm : 1150 Test lines : 1 680 750 089 : 8.35...8.65 travel mm rpm : 1390 5th speed Outside diameter : 11.00...12.00 travel mm x Wall thickness x Length mm : 8.00x2.50x600 GUIDE SLEEVE POSITION Control-lever position (A) Injection pump setting values Degree: -1 Insp. values in parentheses rpm : 1220 Speed Set equal delivery quant. Rack travel in mm : 11.50...14.10 per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY Tent pressure, bar: 25...27 1st version Speed rpm : 500 Prestroke mm : 5.10...5.20 Aneroid pressure h: 1200 Del.quantity : 142.0...147.0) : (5.05...5.25) Rack travel in mm : 8.00...9.00

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 103...111

Testina:

1st rack travel in: 12.80

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1250...1280

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 70...78

Testing:

Speed rpm : 150 Minimum rack trave: 8.80 Speed rpm : 250

Rack travel in mm : 6.80...7.00

CONSTANT REGULATION

Speed rpm : 350...420

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm: 500 Pressure hPa: 1200

Rack travel mm : 13.80...13.90

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.10...10.40

2nd pressure hPa : 790

Rack travel in m: 12.80...12.90

3rd pressure hPa : 520

Rack travel in m: 10,70...10.90

START CUT-OUT

Speed 1/min: 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rpm : 1100

MO4

Del.quantity cm3/: 205.0...207.0

1000 s: (202.0...210.0)

Spread cm3 : 12.00

1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 180.0...210.0

1000 s: (176.0...214.0)

Rack travel in mm : 15.00...16.00

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.50...4.60 : (4.45...4.65) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 12- 1- 5- 9- 8- 3-: MAN 21,0 b3 Test sheet 4- 11- 10- 2- 6- 7 Edition : 14.12.93 : 18.12.92 Replaces Test oil : ISO-4113 Phasing : 0-45-60-105-120-165-Combination no. : 0 402 640 830 180-225-240-285-300-Phasing : 345 Injection pump Tolerance + - ° : 0.50 (0.75) Pump designation : PE12P12OA52OLS7824-2 EP type number : 0 412 620 828 Time to cyl. no. : 12 Governor Governor design. : RQV300...1150PA902-4 BASIC SETTING : 0 421 813 870 Governer no. 1st speed rpm : 1150 Customer-spec. information Customer : MAN Rack travel in mm : 13.70...13.80 : D2842LYE Engine Del.quantity cm3/: 30.4...30.6 1st version kW : 735.0 100 s: (30.1...30.9) Rated speed : 2300 cm3 : 0.5Spread TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil inlet temp. °C : 38...42 rpm : 500 2nd speed Rack travel in mm: 9.1...9.3 Overflow valve Del.quantity cm3/: 14.9...15.1 : 1 417 413 025 100 s: (14.6...15.4) cm3 : 0.8Spread Inlet press., bar: 1.50 100 s: (1.2) rpm : 300 3rd speed Test nozzle holder Rack travel in mm : 7.20...7.40 Del.quantity cm3/ : 5.2...6.0 \* : 1 688 901 019 assembly 100 s: (-) Openina Spread cm3 : --: 207...210 pressure, bar 100 s: (-) Orifice plate (B) Setting of injection pump diameter mm 8,0: with governor GUIDE SLEEVE TRAVEL Test lines : 1 680 750 075 rpm : 3001st speed : 1.20...1.60 travel mm Outside diameter 2nd speed rpm : 450 : 2.90...3.50 rpm : 750 x Wall thickness travel mm x Length mm : 8.00x2.50x1000 3rd speed travel mm : 5.60...6.00 (A) Injection pump setting values 4th speed rpm : 1150 Insp. values in parentheses : 9.50...9.70 travel mm Set equal delivery quant. rpm : 1400 5th speed per values : 13.00...14.00 travel mm BEGINNING OF DELIVERY GUIDE SLEEVE POSITION Test pressure, bar: 25...27 Control-lever position

Degree: -1

Speed rpm : 1270 Rack travel in mm : 11.40...14.00 1/min : 220 (240) Speed FULL LOAD DELIV. AT FULL LOAD STOP FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1150 Speed 1st version Aneroid pressure h: 1300 Aneroid pressure h: -: 304.0...306.0 1000 : (301.0...309.0) Del.quantity Speed rpm : 500 Del.quantity cm3/: 149.0...151.0 : 5.00 1000 s: (146.0...154.0) Spread cm3 1000 : (9.00) cm3 : 8.00 Spread 1000 s: (12.0) RATED SPEED 1st version **BREAKAWAY** Control Lever position degrees: 118...126 1st version 1mm rack travel less than Testing: 1st rack travel in: 12.70 full load rack tr: 12.70 rpm : 1190...1200 Speed rpm : 1190...1200 Speed 2nd rack travel in: 4.00 Speed rpm : 1290...1320 STARTING FUEL DELIVERY 4th rack travel in: 1400 Speed rpm : 0.00...1.00Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 \* 1000 s: (-) LOW IDLE 1 Control lever position degrees: 79...87 rpm : 100 Speed Del.quantity cm3/: - \*\* 1000 s: (-) Testina: Speed man: Minimum rack trave: 8.90 Rack travel in mm : 17.5...21.0 Speed rpm : 300 Rack travel in mm : 7.30...7.50 Rack travel in mm : 2.00 HIGH IDIF Speed rpm : 470...530 1st version Aneroid pressure h: -Speed rpm : 500 Rack travel in mm : < 7.00 Aneroid/Altitude Compensator Test Del.quantity cm3/ : - \*\* 1000 s: (-) 1st version Setting 2nd version Speed rom : 500 Aneroid pressure h: -Speed rpm : 500 Rack travel in mm : < 7.50 Pressure hPa : 1300 : 13.70...13.80 Rack travel mm Del.quantity cm3/: < 50.0 1000 s: (-) Measurement Speed 1/min : 500 3rd version 1st pressure hPa : -Aneroid pressure h: -Speed rpm : 500 Rack travel in mm : 8.40...8.60 Rack travel in m: 9.10...9.30 2nd pressure hPa : 100
Pack travel in m: 9.40...9.50 Del.quantity cm3/: 125.0...200.0 1000 s: (-) 3rd pressure hPa : 470 Rack travel in m: 12.20...12.60 LOW IDLE START CUT-OUT

Speed rpm : 300
Rack travel in mm : 7.20...7.40
Del.quantity cm3/ : 52.0...60.0 \*
1000 s: (-)

Remarks:

: MAN-NR. 3-7153

\* applies to cylinders 4, 5, 6, 8, 10 and 12 \*\* applies for cylinders 1, 2, 3, 7, 9 and 11

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : SCA : 14.12.93 Edition Phasing : 0-60-120-180-240-300 Replaces : 16.08.93 Test oil : ISO-4113 Tolerance + - ° : 0.30 (0.75) Combination no. : 0 402 646 600 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PE6P12OA72ORS7022 EP type number : 0 412 626 873 rpm: 700 1st speed Governor : RQV200...1000PA539 Governor design. Rack travel in mm : 10.90...11.00 -14: 0 421 814 011 Governer no. Del.quantity cm3/: 16.8...17.0 Customer-spec. information 100 s: (16.5...17.3) Customer : SCANIA cm3 : 0.8Spread Engine : DS11 76 100 s: (1.2) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0Test oil Rack travel in mm : 4.6...5.0 inlet temp. °C Del.quantity cm3/: 1.5...1.9 : 38...42 100 s: (1.2...2.2) Overflow valve cm3 : 0.4Spread : 1 417 413 025 100 s: (0.8) Inlet press., bar: 2.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 104 GUIDE SLEEVE TRAVEL 1st speed rpm : 225 Opening | : 1.20...1.60 travel mm : 250...253 pressure, bar rpm : 350 2nd speed travel mm : 2.40...3.00 Orifice plate 3rd speed rpm : 650 diameter mm : 0,7 travel mm : 4.50...5.10 : 1045 4th speed rom : 8.40...8.60 travel mm Test lines : 1 680 750 008 rpm : 1150 5th speed : 9.80...10.20 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x2.00x600 Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1050 Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values \_\_\_ FULL LOAD DELIV. AT FULL LOAD STOP BECINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 700 Aneroid pressure h: 1500 Del.quantity : 100.0....173.0) : 4.40...4.50 Prestroke mm

: (4.35...4.55)

Spread cm3 : 8.00

1000 : (12.00)

RATED SPEED

1st version Control lever

position degrees: 112...120

Testing:

1st rack travel in: 9.90

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1115...1145 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 63...71

Testing:

Speed rpm : 150 Minimum rack trave: 6.20 rpm : 250

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

Speed rpm : 390...450

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm Pressure hPa : 1500

Rack travel mm : 10.90...11.00

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.30

2nd pressure hPa : 390

Rack travel in m: 10.60...10.70
3rd pressure hPa : 340
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 rpm : 1000

De'.quantity cm3/: 166.0...174.0

1000 s: (164.0...176.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 143.0...145.0 1000 s: (140.0...148.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...189.0

1000 s: (136.0...184.0)

Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 1-5-3-6-2-4 Firing order Note remarks Test sheet : SCA Phasing : 0-60-120-180-240-300 Edition : 14.12.93 Replaces Tolerance + - ° : 0.30 (0.75) : ISO-4113 Test oil Time to cyl. no. : 1 Combination no. : 0 402 646 602 BASIC SETTING Injection pump Pump designation : PE6P12DA72DRS7264 1st speed rpm: 700 EP type number : 0 412 626 874 Governor Rack travel in mm : 14.10...14.20 Governor design. : RQ750PA758-14 Governer no. : 0 421 801 659 Del.quantity cm3/: 27.5...27.7 Customer-spec. information 100 s: (27.2...28.0) Customer : SCANIA cm3 : 0.8Spread Engine : D 11 100 s: (1.2) TEST BENCH REQUIREMENTS rpm : 500.02nd speed Test oil Rack travel in mm : 10.20...10.60 inlet temp. °C : 38...42 Del.quantity cm3/: 16.5...16.7 100 s: (16.2...17.0) Overflow valve : 1 417 413 025 FULL LOAD DELIV. AT FULL LOAD STOP Inlet press., bar: 1.50 1st version Speed rpm : 700 Test riozzle holder Aneroid pressure h: 1500 assembly : 1 688 901 104 Del.quantity : 275.0...277.0 1000 : (272.0...280.0) Openina : 8.00 Spread cm3 : 250...253 pressure, bar 1000 : (12.00) Orifice plate RATED SPEED diameter mm : 0,7 1st version Test lines : 1 680 750 0008 Testing: 1st rack travel in: 13.10 Outside diameter rpm : 750...755 Speed x Wall thickness 2nd rack travel in: 4.00 x Length mm : 6.00x2.00x600 Speed rpm : 790...803 4th rack travel in: 850 (A) Injection pump setting values Speed rpm : 0.00...1.00Insp. values in parentheses

Aneroid/Altitude

Rack travel mm

1st version Setting

Speed

Pressure

Compensator Test

rpm

: 500

: 14.10...14.20

hPa : 1500

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Tert pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.20...10 60 2nd pressure hPa : 440 Rack travel in m: 12.10...12.20 3rd pressure hPa : 270 Rack travel in m: 10.85...11.15 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 165.0...167.0 1000 s: (162.0...170.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.50 rpm : 750...755 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 100.0...140.0 1000 s: (96.0...144.0) Rack travel in mm : 10.20...10.60 HIGH IDLE 1st version Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 26.0...34.0 1000 s: (24.0...36.0) cm3 : 5.00 1000 s: (9.00) Spread Remarks: Start-of-delivery setting with ROBO

diaphragm.

**APPLICATION** 

Generator

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : SCA Edition : 14.12.93 Phasing : 0-60-120-180-240-300 Replaces : 15.08.93 Test oil : ISO-4113 : 0.30 (0.75) Tolerance + - ° Combination no. : 0 402 646 603 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PE6P120A720RS7022 EP type number : O 412 626 873 1st speed rpm: 700 Governor Governor design. : RQV200...1000PA539 Rack travel in mm : 12.10...12.20 -15: O 421 814 013 Governer no. Del.quantity cm3/: 20.8...21.0 Customer-spec. information 100 s: (20.5...21.3) Customer : SCANIA cm3 : 0.8Spread Engine : DS11 75 100 s: (1.2) TEST BENCH REQUIREMENTS rpm : 250.0 2rid speed Test oil Rack travel in mm: 4.4...5.0 Del quantity cm3/: 1.5...1.9 inlet temp. °C : 38...42 100 s: (1.2...2.2) Overflow valve Spread cm3 : 0.4: 1 417 413 025 100 s: (0.8) Inlet press., bar: 2.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 104 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 225 **Openina** travel mm : 1.20...1.60 : 250...253 pressure, bar 2nd speed rpm : 350 travel mm : 2.40...3.00 Orifice plate 3rd speed rpm : 650 diameter mm : 0,7 : 4.50...5.10 travel mm rpm : 1045 4th speed : 8.40...8.60 travel mm Test lines : 1 680 750 008 5th speed rpm : 1150 travel mm : 9.80...10.20 Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x2.00x600 x Length mm Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1050 Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BECINNING OF DELIVERY 1st version

Speed

rpm : 700

Del.quantity : 200.0...213.0)

Aneroid pressure h: 1500

Prestroke mm

Test pressure, bar: 25...27

: 4.40...4.50 : (4.35...4.55)

cm3 : 8.00Spread

1000 : (12.00)

RATED SPEED

1st version Control lever

position degrees: 112...120

Testina:

1st rack travel in: 11.10

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1125...1155 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 63...71

Testing:

Speed rpm : 150 Minimum rack trave: 6.20 rom : 250 Speed

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

rpm : 370...430 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 CCM hPa : 1500 Pressure

Rack travel mm : 12.10...12.20

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : -

Rack travel in m: 9.90...10.30

2nd pressure hPa : 590

Rack travel in m: 11.60...11.70

3rd pressure hPa : 390

Rack travel in m: 10.45...10.75

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 1000 De'.quantity cm3/: 194.0...202.0 1000 s: (192.0...204.0)

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 143.0...145.0

1000 s: (140.0...148.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...180.0 1000 s: (136.0...184.0)

Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphraam.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : SCA : 14.12.93 Edition : 22.01.93 Replaces Test oil : ISO-4113 : 0 402 646 604 Combination no. Injection pump Pump designation : PE6P120A720RS7188 EP type number : 0 412 626 832 Governor : RQV350...1050PA795 Governor design. -13: 0 421 814 017 Governer no. Customer-spec. information Customer : SCANIA : DS11 Alivary Engine TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 104 assembly Opening : 250...253 pressure, bar Orifice plate : 0.7 diameter mm Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Rack travel in mm : 9.00...12.00 : 1-5- 3- 6- 2- 4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.30 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 13.30...13.40 Del.quantity cm3/: 23.5...23.7 100 s: (23.2...24.0) Spread cm3 : 0.8100 s: (1.2) rpm : 350.0 2nd speed Rack travel in mm : 4.4...5.0 Del.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9) Spread cm3 : 0.4100 s: (0.8) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 350 : 1.20...1.60 travel mm 2nd speed rom : 650 : 4.10...4.70 travel mm rpm : 1095 3rd speed : 7.30...7.50 travel mm rpm : 1240 4th speed : 8.60...9.00 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1280 Speed Rack travel in mm : 11.00...13.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 1500 Del.quantity : 235.0...237.0 1000 : (232.0...240.0)

cm3

: 8.00

1000 : (12.00)

Spread

BECINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 4.40...4.50

: (4.35...4.55)

## RATED SPEED

1st version Control lever

position degrees: 98...106

Testina:

1st rack travel in: 12.30

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1215...1245 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 68...76

Testing:

Speed : 250 rpm Minimum rack trave: 8.00 Speed : 350 rpm

Rack travel in mm : 4.60...4.80

Rack travel in mm: 2.00

Speed : 375...435 COM

Ameroid/Altitude Compensator Test

1st version

Setting

: 500 Speed man hPa : 1500 Pressure

Rack travel mm : 13.30...13.40

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.60

2nd pressure hPa : 440

Rack travel in m: 12.00...12.10

3rd pressure hPa : 270

Rack travel in m: 10.85...11.15

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 Speed : 1050 rom

Del.quantity cm3/: 207.0...215.0 1000 s: (205.0...218.0)

Amroid pressure h: -

rom : 500 Speed

Del.quantity cm3/: 152.0...154.0

1000 s: (148.0...156.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed : 100 man

Del.quantity cm3/: 150.0...190.0 1000 s: (146.0...194.0)

Rack travel in mm: 13.30...13.40

LOW IDLE

Speed rom

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphraam.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA : 14.12.93 Edition

Replaces : 16.08.93 Test oil : ISO-4113

: 0.402.646.606 Combination no.

Injection pump

Pump designation : PE6P12OA72ORS71880

: 0 412 626 846 EP type number

Governor

Governor design. : RQV200...950PA725-10

Governer no. : 0 421 814 002

Customer-spec. information Customer : SCANIA

: DSC 11 32 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 2.50

Test nozzle holder

assembly : 1 688 901 104

Openina

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Tent pressure, bar: 25...27

Prestroke mm : 4.40...4.50

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 21.3...21.5

100 s: (21.0...21.8)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 250.0 Rack travel in mm: 4.4...5.0

Del.quantity cm3/: 1.4...1.8 100 s: (1.0...2.2)

Spread cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

: 1.20...1.60 travel mm

rpm : 350 2nd speed

travel mm : 2.40...3.00

rpm : 650 3rd speed

travel mm : 4.50...5.10

rpm : 1045 4th speed

travel mm : 8.40...8.60

: 1125 5th speed nom

: 9.30...9.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1150

Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del.quantity : 213.0...215.0 1000 : (210.0...218.0)

Spread

cm3 : 8.00

1000 : (12.00)

RATED SPEED

1st version

Control lever

position degrees: 110...118

Testing:

1st rack travel in: 11.50

rpm : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1090...1120 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 60...68

Testing:

Speed : 150 COM

Minimum rack trave: 6.20

rpm : 250

Rack travel in mm : 4.60...4.80

Rack travel in mm: 2.00

rpm : 370...430 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed man. Pressure hPa : 1500

: 12.50...12.60 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.60

2nd pressure hPa : 440

Rack travel in m: 12.00...12.10 3rd pressure hPa : 270

Rack travel in m: 10.85...11.15

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

rpm : 950 Speed

De'.quantity cm3/: 198.0...206.0

1000 s: (196.0...208.0)

Aneroid pressure h: -

Speed rom : 500 Del.quantity cm3/: 152.0...154.0

1000 s: (149.0...157.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.50

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

: 100 rom

Del.quantity cm3/: 145.0...185.0

1000 s: (141.0...189.0)

Rack travel in mm : 10.20...10.60

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : UNI Edition : 14.12.93 Replaces : 18.12.92 Test oil : ISO-4113 Combination no. : 0 402 646 607 Injection pump Pump designation : PE6P130A720RS7270 EP type number : 0 412 636 821 Governor Governor design. : RQV300...950PA946-4 Governer no. : 0 421 814 026 Customer-spec. information Customer : IVECO-UNIC : 8210.42P.032 Engine TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 075 Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000 (A) Injection pump setting values

1st speed Spread 2nd speed Spread 1st speed travel mm 2nd speed 4th speed travel mm Speed 1st version Speed

Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Tert pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15) Rack travel in mm : 13.50...14.50 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 950

Rack travel in mm: 11.30...11.40

Del.quantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

cm3 : 0.5

100 s: (0.8)

rpm : 275.0 Rack travel in mm : 4.5...4.9 Del.guantity cm3/: 1.9...2.5

100 s: (1.6...2.8)

cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL rpm : 995

: 8.40...8.60 rpm : 300

: 1.10...1.30 travel mm

3rd speed rpm : 450

: 2.80...3.40 travel mm

 $r_{1000}$  : 650 : 4.40...5.00

: 1200 5th speed rom

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position Degree: -1

rpm : 1060

Rack travel in mm : 9.00...11.60

FULL LOAD DELIV. AT FULL LOAD STOP

rpm : 950 Aneroid pressure h: 1000

Del.quantity : 211.0...216.0)

Spread cm3 : 5.00

1000 : (8.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 10.30 rpm : 990...1000 Speed 2nd rack travel in: 4.00

rpm : 1045...1075

3rd rack travel in: 4.00 4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 73...81

Testing:

Speed : 100 rpm Minimum rack trave: 6.90 rom : 275

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 275...400

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 550 Pressure hPa : 1000

Rack travel mm : 11.30...11.40

Measurement

 $1/\min : 550$ Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.50 2nd pressure hPa : 300

Rack travel in m: 11.00...11.10

3rd pressure hPa : 260

Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Annroid pressure h: 1000 rpm : 550 Speed

Del.quantity cm3/: 213.0...219.0 1000 s: (210.0...222.0)

Aneroid pressure h: -

Speed rpm : 550 Del.quantity cm3/ : 184.0...186.0

1000 s: (181.0...189.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

rpm : 990...1000

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 275 Rack travel in mm : 4.50...4.90 Del.quantity cm3/: 19.0...25.0 1000 s: (16.0...28.0) Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA

Edition : 14.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 608

Injection pump

Pump designation : PE6P120A720RS7188J

EP type number : 0 412 626 877

Governor

Governor design. : RQ200/950PA745-3

Governer no. : 0 421 801 579

Customer-spec. information Customer : SCANTA

Engine : DSC 11 71

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 104 assembly

Opening

pressure, bar : 250...253

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Tert pressure, bar: 25...27

Prestroke mm : 4.40...4.50

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 15.6...15.8

100 s: (15.3...16.1)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 250.0Rack travel in mm: 4.4...5.0

Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2) cm3 : 0.4 Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 600

Rack travel in mm : 15.20...17 80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

: 156.0...158.0 Del.quantity

1000 : (153.0...161.0) cm3 : 8.00

Spread 1000 : (12.00)

RATED SPEED

1st version

Setting point:

rpm : 600 Rack travel in mm : 16.5

Testina:

1st rack travel in: 9.70

rpm : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1085...1115 Speed

M20

4th rack travel in: 1250

Speed rom : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm: 4.7

Testing:

rpm : 150 Speed Minimum rack trave: 6.00 rpm : 250

Rack travel in mm : 4.60...4.80 Rack travel in mm : 2.00 rom : 320...360 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm Pressure hPa : 1500

: 10.70...10.80 Rack travel mm

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 10.70...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 Speed : 950 rpm

Del.quantity cm3/: 154.0...162.0

1000 s: (152.0...164.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.70

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 150.0...190.0

1000 s: (146.0...197.0)

Rack travel in mm: 10.70...10.80

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

Note remarks

Test sheet

: SCA

Edition

: 14.12.93

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 646 611

Injection pump

Pump designation : PE6P120A720RS7188

EP type number

: 0 412 626 832

Governor

Governor design. : RQV200...950PA725-9

Governer no.

: 0 421 813 988

Customer-spec. information Customer

: SCANTA

Engine

: DSC 11 39

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 104

Opening

pressure, bar

: 250...253

Orifice plate

diameter mm

: 0,7

Test lines

: 1 680 750 008

Outside diameter x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Tert pressure, bar: 25...27

Prestroke mm

: 4.40...4.50

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.30 (0.75)

Time to cyl. no. :1

BASIC SETTING

1st speed

rpm : 700

Rack travel in mm : 13.40...13.50

Del.guantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

Spread

cm3 : 0.8

100 s: (1.2)

rpm : 250.02nd speed

Rack travel in mm: 4.6...5.0

Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.4Spread

100 s: (0.8)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.40...1.80 travel mm

2nd speed rpm : 350

: 2.30...2.90 travel mm

3rd speed rpm : 650

travel mm : 5.20...5.80

rpm : 995 4th speed

: 7.30...7.50 travel mm

rpm : 1180 5th speed

travel mm : 8.70...9.10

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1260

Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed

rpm : 700

Aneroid pressure h: 1500

Del.quantity : 238.0...240.0

1000 : (235.0...243.0)

Spread cm3 : 8.00

1000 : (12.00)

RATED SPEED

1st version Control lever

position degrees: 109...117

Testina:

1st rack travel in: 12.40 Speed rpm : 990...1000 2nd rack travel in: 4.00

Speed rpm : 1195...1225 4th rack travel in: 1350

4th rack travel in: 1350 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 61...69

Testing:

Speed rpm : 150 Minimum rack trave: 6.00 Speed rpm : 250 Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00 Speed rpm : 370...430

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 1500

Rack travel mm : 13.40...13.50

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.20...10.60

2nd pressure hPa : 440

Rack travel in m: 12.00...12.10

3rd pressure hPa : 270

Rack travel in m: 10.85...11.15

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 Speed rpm : 950

De'.quantity cm3/: 220.0...228.0

1000 s: (218.0...230.0)

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 151.0...155.0

1000 s: (149.0...157.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/ : 150.0...190.0

1000 s: (146.0...194.0) Rack travel in mm : 10.20...10.60

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO

diaphragm.

Note remarks

: DAF Test sheet

Edition : 14.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 612

Injection pump

Pump designation : PE6P120A320RS7248

-10x

EP type number : 0 412 626 907

Governor

Governor design. : RQ275/1150PA987

: 0 421 801 578 Governer no.

Customer—spec. information Customer : DAF

Engine : RS 200 M

1st version kW : 200.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 12.00...13.00

firing order : 1-5- 3- 6- 2- 4

Pinasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 11.2...12.2 Difference \* CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 17.1...17.3

100 s: (16.8...17.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm : 5.2...5.6 Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 550 Speed

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

Anerous Del.quantity 1000 : 171.0...173.0 : (168.0...176.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed mq: : 550 Rack travel in mm: 15.8

Testing:

1st rack travel in: 10.70

Speed rpm : 1185...1201

2nd rack travel in: 4.00

rpm : 1255...1285 Speed

4th rack travel in: 1450

Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

LOW : 275 Rack travel in mm: 4.9

Testina:

Speed rpm : 175 Minimum rack trave: 7.00 rpm : 275 Speed

Rack travel in mm : 4.80...5.00

Rack travel in mm: 2.00

rpm : 320...360 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed rom Pressure

: 600 hPa : 1000

Rack travel mm : 11.70...11.80

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 340

Rack travel in m: 11.20...11.30 3rd pressure hPa : 200

Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 600

Del.quantity cm3/: 120.5...122.5

1000 s: (117.5...125.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1185...1201

Remarks:

Note remarks

Test sheet : DAF

Edition : 15.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 613

Injection pump

Pump designation : PE6P120A320RS7248

-10W

EP type number : 0 412 626 908

Governor

Governor design. : RQ275/1150PA987

Governer no. : 0 421 801 578

Customer-spec. information

Customer : DAF

Engine : RS 180 M

1st version kW : 180.0

Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.30 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 11.2...12.2 Difference ° CS : 2.25...3.75

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 10.70...10.80

Del.guantity cm3/: 15.3...15.5

100 s: (15.0...15.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.2...5.6 Del.quantity cm3/ : 1.3...1.9 100 s: (1.0...2.2)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

Del.quantity : 153.0...155.0

1000 : (150.0...158.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed COM Rack travel in mm: 15.8

Testing:

1st rack travel in: 9.70

Speed rpm : 1185...1201

2nd rack travel in: 4.00

rpm : 1250...1280 Speed

4th rack travel in: 1450

rpm : 0.00...1.40 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Rack travel in mm: 4.9

Testing:

rpm : 175 Speed Minimum rack trave: 7.00 rpm : 275

Rack travel in mm : 4.80...5.00

Rack travel in mm : 2.00 : 320...360 Speed mCn.

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 600 rpm hPa : 1000 Pressure

: 10.70...10.80 Rack travel mm

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 300 Rack travel in m: 10.40...10.50

3rd pressure hPa : 240

Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

\_ rpm : 600 Speed

Del.quantity cm3/: 121.5...123.5

1000 s: (118.5...126.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.70

Speed rpm : 1185...1201

Remarks:

Note remarks

Test sheet : DAF

Edition : 15.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 614

Injection pump

Pump designation : PE6P120A320RS7248

-10W

EP type number : 0 412 626 908

Governor

Governor design. : RQV275...1150PA986

Governer no. : 0 421 813 920

Customer-spec. information Customer : DAF

Engine : RS 180 M

1st version kW : 180.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.30 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4,90...5.10 & maximum rack tra: 11.2...12.2 Difference \* CS : 2.25...3.75

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 15.3...15.5

100 s: (15.0...15.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm : 5.2...5.6 Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.8 100 s: (1.2) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 275 : 1.19...1.69 travel mm

2nd speed rpm : 365 travel mm

: 2.27...2.77 3rd speed rpm : 450

travel mm

: 2.82...3*.*32 : 799

4th speed rom

travel mm : 4.96...5.46

: 1206 5th speed rpm

travel mm : 7.99...8.49

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 8.40...11.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 1000 Del.quantity : 153.0...155.0 1000 : (150.0...158.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 114...122 Testing: 1st rack travel in: 9.70 rpm : 1190...1200 2nd rack travel in: 4.00 Speed rpm : 1275...1305 4th rack travel in: 1450 rpm : 0.00...1.40 Speed LOW IDLE 1 Control lever position degrees: 78...86 Testina: Speed : 175 rpm Minimum rack trave: 7.40 rom : 275 Rack travel in mm : 4.80...5.00 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure : 10.70...10.80 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 9.40...9.60 2nd pressure hPa : 300 Rack travel in m: 10.40...10.50 3rd pressure hPa : 240 Rack travel in m: 9.90...10.10 FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: Speed rpm : 600
Del.quantity cm3/: 121.5...123.5
1000 s: (118.5...126.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70 Speed rpm : 1190...1200

Remarks:

:

NO1

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 5.20...5.30 Note remarks : (5.15...5.35) Rack travel in mm : 12.00...13.00 Firing order : 1-5-3-6-2-4 Test sheet : DAF Edition : 14,12,93 Replaces Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 402 646 615 Tolerance 3 - 2 : 0.50 (0.75)Injection pump Pump designation : PE6P12DA32DRS7248 Time to cyl. no. : 1-10x: 0 412 626 907 EP type number BEGINNING OF DELIVERY DIFFERENCE Governor Governor design: RQV275...1150PA986 betw. rack trav. m: 4.90...5.10 Governer ro. : 0 421 813 920 8 maximum rack tra: 11.2...12.2 Difference ° CS : 2.25...3.75 Customer-spec, information Customer : DAF BASIC SETTING Engine : RS 200 M 1st speed rpm: 1000 1st version kW : 200.0 Rack travel in mm : 11.70...11.80 : 2300 Rated speed Del.quantity cm3/: 17.1...17.3 TEST BENCH REQUIREMENTS 100 s: (16.8...17.6) Test oil inlet temp. °C : 38...42 cm3 : 0.5Spread Overflow valve 100 s: (0.9) : 1 417 413 025 rpm : 275.0 2nd speed Inlet press., bar: 1.50 Rack travel in mm: 5.2...5.6 Del.quantity cm3/: 1.3...1.9 Test nozzie holder 100 s: (1.0...2.2) : 1 688 901 105 assembly Spread cm3 : 0.8100 s: (1.2) Openina ( pressure, bar : 207...210 (B) Setting of injection pump with governor Orifice plate diameter mm. : 0,8 GUIDE SLEEVE TRAVEL 1st speed rpm : 275 : 1.19...1.69 travel mm Test Lines : 1 680 750 089 2nd speed 365 rpm : 2.27...2.77 travel mm Outside diameter 3rd speed rpm : 450 x Wall thickness travel mm : 2.82...3.32 x Length mm : 8.00x2.50x600 4th speed : 799 **Lbw** travel mm : 4.96...5.46 (A) Injection pump setting values

5th speed : 1206 rpm Insp. values in parentheses travel mm : 7.99...8.49 GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1335

Set equal delivery quant.

per values \_\_\_\_

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

Rack travel in mm: 9.00...11.60 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 1000 : 171.0...173.0 Del.quantity 1000 : (168.0...176.0) Spread : 5.00 cm3 1006 : (9.00) RATED SPEED 1st version Control Lever position degrees: 115...123 Testing: 1st rack travel in: 10.70 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 Speed rpm : 1290...1320 4th rack travel in: 1450 Speed rpm : 0.00...1.40 LOW IDLE 1 Control Lever position degrees: 78...86 Testing: Speed : 175 rpm Minimum rack trave: 7.40 rpm : 275 Rack travel in mm : 4.80...5.00 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 1000 Pressure : 11.70...11.80 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 9.40...9.60 2nd pressure hPa : 340 Rack travel in m: 11.20...11.30 3rd pressure hPa : 200 Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: Speed rpm : 600
Del.quantity cm3/ : 120.5...122.5
1000 s: (117.5...125.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70 Speed rpm : 1190...1200

Remarks:

**NO3** 

1st version

Note remarks

Test sheet : SCA Edition : 15.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 619

Injection pump

Pump designation : PE6P12DA72DRS71880

EP type number : 0 412 626 846

Governor

Governor design. : RQV200...950PA725-11

Governer no. : 0 421 814 033

Customer-spec, information Customer : SCANIA

Engine : DSC 11 35

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 2.50

Test nozzle holder

: 1 688 901 104 assembly

Openina .

: 250...253 pressure, bar

Orifice plate

diameter mm : 0.7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Tent pressure, ban: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

: 0.30 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 21.9...22.1

100 s: (21.6...22.4)

Spread cm3 : 0.8

100 s: (1.2)

rpm : 250.0 2nd speed Rack travel in mm: 4.4...5.0 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

: 1.20...1.60 travel mm

rpm : 350 2nd speed

travel mm : 2.40...3.00

3rd speed rpm : 650

: 4.50...5.10 travel mm

rpm : 1045 4th speed

travel mm : 8.40...8.60

rpm : 1125 5th speed

travel nm : 9.30...9.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 700

Aneroid pressure h: 1500

Del.quantity : 219.0...224.0)

Spread cm3 : 8.00

1000 : (12.00)

RATED SPEED

1st version Control Lever

position degrees: 112...120

Testina:

1st rack travel in: 11.70 rpm : 990...1000 Speed 2nd rack travel in: 4.00

: 1095...1125 Speed rpm 4th rack travel in: 1250 rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 60...68

Testing:

Speed : 150 rpm Minimum rack trave: 6.00 Speed : 250 mqn Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00 Speed : 370...430 rpm

Aneroid/Altitude Compensator Test

1st version Settina

Speed : 500 rom hPa : 1500 Pressure

Rack travel mm : 12.70...12.80

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.50

2nd pressure hPa : 375

Rack travel in m: 12.00...12.10

3rd pressure hPa : 185

Rack travel in m: 10.85...11.15

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 Speed : 950 rpm

De'.quantity cm3/: 202.0...210.0 1000 s: (200.0...212.0)

Aneroid pressure h: -Speed : 500 moth.

Del.quantity cm3/: 114.0...116.0 1000 s: (111.0...119.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 110.0...140.0 1000 s: (106.0...144.0)

Rack travel in mm : 9.10...9.50

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphraam.

Note remarks

Test sheet : SCA

Edition : 15.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 620

Injection pump

Pump designation : PE6P12OA72ORS7188 : 0 412 626 832

EP type number

Governor

Governor design. : RQV300...900PA795-17 : 0 421 814 058 Governer no.

Customer-spec. information Customer : SCANIA

Engine : D 11

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 104 assembly

Opening

pressure, bar : 250...253

Orifice plate

diameter mm : 0.7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Tert pressure, bar: 25...27

Prestroke mm : 4.40...4.50

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 300

Rack travel in mm: 4.5...5.1 Del.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9)

Spread cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 300 : 1.40...1.80 travel mm

rpm : 350 2nd speed

: 1.90...2.50 travel mm

rpm : 6503rd speed

: 4.70...5.30 travel mm

rpm : 950 4th speed

: 7.85...8.15 travel mm

rpm : 1045 5th speed

: 9.20...9.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1280 Speed

Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del.quantity : 255.0...240.0)

cm3Spread : 8.00

1000 : (12.00)

RATED SPEED

1st version Control Lever

position degrees: 101...109

Testina:

1st rack travel in: 12.30 rpm : 940...950 Speed 2nd rack travel in: 4.00

rpm : 1020...1050 Speed

4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 69...77

Testing:

rrom : 200 Speed Minimum rack trave: 7.50 : 300 rpm

Rack travel in mm : 4.70...4.90

Rack travel in mm: 2.00 Speed rpm: 315...375

Ameroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom Pressure hPa : 1500

: 13.30...13.40 Rack travel mm

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : -

Rack travel in m: 10.20...10.60

2nd pressure hPa : 440

Rack travel in m: 12.00...12.10 3rd pressure hPa : 270

Rack travel in m: 10.85...11.15

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 rpm : 900

Del.quantity cm3/: 218.0...226.0

1000 s: (214.0...230.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 152.0...154.0

1000 s: (149.0...157.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

rpm : 940...950 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 140.0...180.0

1000 s: (-)

Rack travel in mm : 10.20...10.60

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

Note remarks

Test sheet : SCA Edition : 16.12.93

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 645 621

Injection pump

Pump designation : PE6P120A720RS7264 EP type number : 0 412 626 874

Governor

Governor design. : RQ900PA758-16 Governor no. : 0 421 801 685

Customer—spec. information Customer : SCANIA

Engine : D 11

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 104

Opening

pressure, bar : 250...253

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

 $\times$  Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Tert pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 26.3...26.5

100 s: (26.0...26.8)

Spread cm3:0.8

100 s: (1.2)

2nd speed rpm : 500.0

Rack travel in mm : 10.20...10.60 Del.quantity cm3/ : 16.5...16.7

100 s: (16.2...17.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 1500

Del.quantity : 263.0...265.0

1000 : (260.0...268.0)

Spread cm3 : 8.00 1000 : (12.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 13.10 Speed rpm : 900...905 2nd rack travel in: 4.00

Speed rpm : 950...963 4th rack travel in: 1000

Speed rpm : 0.00...1.00

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1500 Rack travel mm : 14.10...14.20

N08

Measurement  $1/\min : 500$ Speed 1st pressure hPa : --Rack travel in m: 10.20...10.60 2nd pressure hPa : 440 Rack travel in m: 12.00...12.10 3rd pressure hPa : 270 Rack travel in m: 10.90...11.10 FUEL DELIVERY CHARACTERISTICS 1st version Ameroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 165.0...167.0 1000 s: (162.0...170.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.10 Speed rpm : 900...905 STARTING FUEL DELIVERY : 100 rpm Del.quantity cm3/ : 110.0...130.0 1000 s: (106.0...134.0) Rack travel in mm: 10.20...10.60 HIGH IDLE 1st version Rack travel in mm : 5.40...5.60 Del.quantity cm3/ : 26.0...34.0 1000 s: (24.0...36.0) Spread cm3 : 5.001000 s: (9.00) Remarks: Start-of-delivery setting with ROBO diaphragm. **APPLICATION** 

Generator

Generator set

Note remarks

Test sheet : SCA

Edition : 16.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 622

Injection pump

Pump designation : PE6P120A72ORS7264

EP type number : 0 412 626 874

Governor

Governor design. : RQ1050PA758-17 Governer no. : 0 421 801 686

Customer-spec. information

Customer : SCANIA

Engine : D 11

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 104

Openina

pressure, bar : 250...253

Orifice plate

diameter mm : 0.7

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Tert pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.30 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 26.3...26.5

100 s: (26.0...26.8)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 500.0

Rack travel in mm : 10.20...10.60 Del.quantity cm3/ : 16.5...16.7

100 s: (16.2...17.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 1500

: 263.0...265.0 Del.quantity

1000 : (260.0...268.0)

: 8.00 cni3 Spread 1000 : (12.00)

RATED SPEED

1st version

Testina:

1st rack travel in: 13.10

Speed rpm : 1050...1055

2nd rack travel in: 4.00

Speed rpm : 1099...1112

4th rack travel in: 1150

Speed rpm : 0.00...1.00

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rom

hPa : 1500 Pressure

Rack travel mm : 14.10...14.20

N10

Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.20...10.60 2nd pressure hPa : 440 Rack travel in m: 12.10...12.20 3rd pressure hPa : 270 Rack travel in m: 10.85...11.15 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 165.0...167.0 1000 s: (162.0...170.0) **BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 13.10 Speed rpm : 1050...1055

STARTING FUEL DELIVERY

Speed Libu : 100

Del.quantity cm3/: 110.0...130.0 1000 s: (106.0...134.0)

Rack travel in mm : 10.20...10.60

HIGH IDLE

1st version

Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 26.0...34.0

1000 s: (24.0...36.0)

: 5.00 Spread cm3

1000 s: (9.00)

Remarks:

Start-of-delivery setting with ROBO diaphragm.

**APPLICATION** 

Generator

Generator set

N11

Note remarks

: DAF Test sheet Edition : 15.12.93

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 624

Injection pump

Pump designation : PE6P120A320RS7299 EP type number **:** 0 412 626 885

Governor

Governor design. : RQV275...1000FA1075K

: 0 421 815 356 Governer no.

Customer-spec. information Customer : DAF

Engine : WS 295 M

1st version kW : 295.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 95...115

Test nozzle holder

assembly : 1 688 901 105

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 Prestroke mm : (4.75...4.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.30 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 980

Rack travel in mm : 14.70...14.80

Del.quantity cm3/: 28.1...28.3

100 s: (27.8...28.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm: 5.4...5.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

: 1.89...2.39 travel mm

2nd speed rpm : 334

: 2.92...3.42 travel mm

3rd speed rpm : 390

travel mm : 3.54...4.04

4th speed : 689 rpm

: 6.18...6.68 travel mm

5th speed : 1046 rpm

: 9.58...10.08 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1135 Speed

Rack travel in mm : 12.30...14.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 980 Aneroid pressure h: 1500 : 281.0...283.0 Del.quantity 1000 : (278.0...286.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testing: 1st rack travel in: 13.40 rpm : 1028...1038 Speed 2nd rack travel in: 4.00 rpm : 1145...1175 Speed 4th rack travel in: 1275 rpm : 0.00...1.40Speed LOW IDLE 1 Control lever position degrees: 73...81 Testing: Speed : 175 rom Minimum rack trave: 7.80 rpm : 275 Rack travel in mm: 4.70...4.90 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 980 Rack travel in m: 14.70...14.80 nd speed rpm : 750 2nd speed Rack travel in m: 13.95...14.10 3rd speed rpm : 600 Rack travel in m: 13.00...13.20 4th speed rpm : 500 Rack travel in m: 12.60...12.80 Aneroid/Altitude Compensator Test 1st version Setting Speed : 980 rom hPa : 1500 Pressure : 14.30...14.40 Rack travel mm Measurement Spred 1/min: 980 1st pressure hPa : 840 Rack travel in m: 12.95...13.05

Rack travel in m: 10.15...10.35 3rd pressure hPa : -Rack travel in m: 8.90...9.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed rpm : 750 Del.quantity cm3/: 293.0...297.0 1000 s: (290.0...300.0) cm3 : 8.00Spread 1000 s: (12.0) Ameroid pressure h: -Speed rpm : 600 Del.quantity cm3/ : 171.0...173.0 1000 s: (168.0...176.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.40 Speed rpm : 1028...1038 Remarks: :

2nd pressure hPa : 430

Note remarks

Test sheet : DAF

Edition : 15.12.93

Replaces Test oil

: ISO-4113

Combination no. : 0 402 646 626

Injection pump

Pump designation : PE6P120A320RS7299

EP type number

: 0 412 626 885

Governor

: RQV275...1000PA1076K Governor design.

Governer no.

: 0 421 815 357

Customer-spec. information : DAF

Customer

Engine : WS 268 M

1st version kW : 268.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Overflow

quantity min. 1/h: 95...115

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90

: (4.75...4.95) Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.30 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 980

Rack travel in mm : 13.60...13.70

Del.guantity cm3/: 24.9...25.1

100 s: (24.6...25.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.4...5.8 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

Spread

1st speed rpm : 275

: 2.63...3.13 travel mm

rpm : 300 2nd speed

travel mm : 2.87...3.37

3rd speed rpm : 370

: 3.58...4.08 travel mm

4th speed rpm : 680

: 6.20...6.70 travel mm

5th speed rpm : 1045

travel mm : 9.67...10.17

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 11.30...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 980 Aneroid pressure h: 1500 Del.quantity : 249.0...251.0 1000 : (246.0...254.0) Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 116...124 Testing: 1st rack travel in: 12.55 rpm : 1027...1037 2nd rack travel in: 4.00 Speed rpm : 1135...1165 4th rack travel in: 1275 Speed rpm : 0.00...1.40 LOW IDLE 1 Control lever position degrees: 72...80 Testing: Speed : 175 rpm Minimum rack trave: 7.50 rpm : 275 Rack travel in mm: 4.70...4.90 Rack travel in mm: 2.00 Speed rpm : 365...425 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 980 Rack travel in m: 13.75...13.85 rpm : 750 2nd speed Rack travel in m: 13.00...13.10 3rd speed rpm : 825 Rack travel in m: 13.20...13.40 4th speed rpm : 600 Rack travel in m: 12.00...12.20 5th speed rpm : 500 Rack travel in m: 11.60...11.80 Aneroid/Altitude Compensator Test 1st version Setting Speed : 980 rpm hPa : 1500 Pressure : 13.50...13.60 Rack travel mm Measurement

1st pressure hPa : 720 Rack travel in m: 12.20...12.30 2nd pressure hPa : 360 Rack travel in m: 9.75...9.85 3rd pressure hPa : -Rack travel in m: 8.40...8.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed rpm : 750 Del.quantity cm3/: 261.0...265.0 1000 s: (258.0...268.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 600 Del.quantity cm3/: 153.0...155.0 1000 s: (150.0...158.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.55 rpm : 1027...1037 Speed

;

Remarks:

Speed 1/min: 980

Note remarks

Test sheet : SCA

Edition : 15.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 627

Injection pump

Pump designation : PE6P12OA32ORS7297 EP type number : 0 412 626 884

EP type number Governor

Governor design. : RQV35U...11UOPA795

-12

Governer no. : 0 421 813 914

Customer-spec. information Customer : SCANIA

Engine : DSC 909

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 104

Opening

pressure, bar : 250...253

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 12.50...13.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 20.4...20.6

100 s: (20.1...20.9)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 250.0

Rack travel in mm : 4.6...5.2 Del.quantity cm3/ : 2.3...2.9

100 s: (2.0...3.2)

Spread cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.30...1.70

2nd speed rpm : 650

travel mm : 4.10...4.70

3rd speed rpm: 1145

travel mm : 7.80...8.00

4th speed rpm: 1255

travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm: 1300

Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1500

Del.quantity : 204.0...206.0

1000 : (201.0...209.0)

Spread cm3 : 8.00

1000 : (12.00)

## RATED SPEED

1st version Control lever

position degrees: 102...110

Testing:

1st rack travel in: 12.20

rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1255...1285 4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 70...78

Testing:

Speed rpm : 150 Minimum rack trave: 6.40 rpm : 250

Rack travel in mm : 4.80...5.00

Rack travel in mm: 2.00 Speed rpm : 300...360

Aneroid/Altitude Compensator Test

1st version Settina

Speed : 500 LOW Pressure hPa : 1500

Rack travel mm 13.20...13.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.80...11.20

2nd pressure hPa : 670

Rack travel in m: 12.80...12.90

3rd pressure hPa : 470

Rack travel in m: 11.80...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 Speed : 1100 rom

Del.quantity cm3/: 179.0...187.0

1000 s: (177.0...189.0)

Ameroid pressure h: -

: 500 rpm

Del.quantity cm3/: 169.0...171.0

1000 s: (166.0...174.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.20

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 245.0...285.0 1000 s: (241.0...289.0)

Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension

 $3.2...3.4 \, \text{mm}$ .

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : LIA Edition : 15.12.93 Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 628

Injection pump

Pump designation : PE6P120A320RS7296 EP type number : 0 412 626 888

Governor

Governor design. : RQV325...1000PA1058

-1

Governer no. : 0 421 814 060

Customer-spec. information Customer : LIAZ

Engine : M640F

1st version kW : 210.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 103 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 4.95...5.05

: (4.90...5.10

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance - - ° : 0.30 (0.75)

Time to cyl. no. : 1

**BASIC SETTING** 

1st speed rpm: 1000

Rack travel in mm : 15.30...15.40

Del.quantity cm3/: 18.8...19.0

100 s: (18.5...19.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 7.7...8.3 Del.quantity cm3/ : 2.2...2.8

100 s: (1.9...3.1)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.35...1.75

2nd speed rpm : 404

travel mm : 2.16...2.66

3rd speed rpm : 500

: 3.10...3.60 travel mm

rpm : 764 4th speed

: 5.52...6.02 travel mm

rpm : 1057 5th speed

: 8.43...8.93 travel mm

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1 Speed rpm : 1080

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1000 Aneroid pressure h: 1500

: 188.0...190.0 Deliquantity

1000 : (185.0...193.0)

Spread on: 5.00

100% (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 14.30

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1175...1205 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 65...73

Testing:

; 225 Speed חכיז Minimum rack trave: 9.70 Speed rpm : 325

Rack travel in mm : 7.70...8.30

CONSTANT REGULATION

Speed rpm : 275...425

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 1500 Pressure

Rack travel mm : 15.30...15.40

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 12.70...13.10

2nd pressure hPa : 710

Rack travel in m: 14.9...15.000

3rd pressure hPa : 340

Rack travel in m: 13.55...13.95

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 141.0...145.0

1000 s: (139.0...147.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.30

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 320.0...360.0

1000 s: (316.0...384.0)

Rack travel in mm : 20.00...21.00

Remarks:

N19

Note remarks

Test sheet : LIA Edition : 15.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 629

Injection pump

Pump designation : PE6P120A320RS7278 EP type number : 0 412 626 880

Governor

Governor design. : RQV325...1000PA1058

-2

Governer no. : 0 421 814 061

Customer-spec, information Customer : LIAZ

Engine : M636S

1st version kW : 170.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Openina

pressure, bar : 207...210

Orifice plate

diameter mm 8.0:

Test lines : 1 680 750 069

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.95...5.05

: (4.90...5.10

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance - - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 650

Rack travel in mm : 10.60...10.70

Del.quantity cm3/: 20.3...20.5

100 s: (20.0...20.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.02nd speed Rack travel in mm: 3.8...4.4

Del.quantity cm3/ : 1.9...2.5

100 s: (1.6...2.8)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.35...1.75

2nd speed rpm : 404

travel mm : 2.16...2.66

3rd speed rom : 500

: 3.10...3.60 rpm : 764 travel mm

4th speed

travel mm : 5.52...6.02

5th speed rpm : 1057

: 8.43...8.93 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 8.40...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 650 Aneroid pressure h: 1500

Deliquantity : 203.0...205.0

1000 : (200.0...203.0)

cm3 : 5.00 Spread

1000:(9.00)

RATED SPEED

1st version Control Lever

position degrees: 111...119

Testina:

1st rack travel in: 9.65

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1110...1140 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 57...65

Testing:

rpm Speed : 225 Minimum rack trave: 5.70 : 325 Speed rpm

Rack travel in mm : 3.80...4.40

CONSTANT REGULATION

Speed rpm : 275...425

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm Pressure hPa : 1500

Rack travel mm : 10.60...10.70

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.70

2nd pressure hPa : 590

Rack travel in m: 10.15...10.25 3rd pressure hPa : 365

Rack travel in m: 8.95...9.15

FUEL DELIVERY CHARACTERISTICS

1st version

Ameroid pressure h: 1500 Speed rpm : 1000 Del.quantity cm3/: 181.0...187.0

1000 s: (182.0...190.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 157.0...161.0 1000 s: (155.0...163.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.65

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 305.0...345.0

1000 s: (301.0...349.0)

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : SCA Phasina : 0-60-120-180-240-300 : 15.12.93 Edition Replaces : 0.30 (0.75) Tolerance + - \* Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 402 646 630 BASIC SETTING Injection pump Pump designation : PE6P120A720RS7302 1st speed rpm: 700 EP type number : D 412 626 904 Governor Rack travel in mm : 13.30...13.40 Governor design. : RQ200/950PA745-6 : 0 421 801 701 Governer no. Del.quantity cm3/: 17.0...17.2 Customer-spec, information 100 s: (16.7...17.5) Customer : SCANIA cm3 : 0.8Spread : DS 11 78 Engine 100 s: (1.2) TEST BENCH REQUIREMENTS 2rid speed rpm : 250 Test oil Rack travel in mm: 4.2...4.8 Del.quantity cm3/ : 1.3...1.9 inlet temp. °C : 38...42 100 s: (1.0...2.2) Overflow valve cm3 : 0.4Spread : 1 417 413 025 100 s: (0.8)Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -1 assembly : 1 688 901 104 Speed rpm : 600 Rack travel in mm : 15.20...17.80 Opening pressure, bar : 250...253 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,7 Speed rpm : 700 Aneroid pressure h: 1500 : 170.0...172.0 Del.quantity Test Lines : 1 680 750 008 1000 : (167.0...175.0) : 8.00 Spread cm3 Outside diameter 1000 : (12.00) x Wall thickness x Length mm : 6.00x2.00x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values

Speed rpm : 600 Rack travel in mm : 16.5

Testing:

1st rack travel in: 12.30
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1110...1140

BEGINNING OF DELIVERY

Prestroke mm

Tent pressure, bar: 25...27

Rack travel in mm: 9.00...12.00

: 4.40...4.50

: (4.35...4.55)

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm: 250 Rack travel in mm: 4.50

Test ina:

Speed rpm : 150 Minimum rack trave: 6.00 rpm : 250

Rack travel in mm : 4.40...4.60

Rack travel in mm: 2.00

rpm : 315...355 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rom Pressure hPa : 1500

Rack travel mm : 13,30...13.40

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 11.30...11.70

2nd pressure hPa : 400

Rack travel in m: 13.00...13.10 3rd pressure hPa : 210

Rack travel in m: 11.75...12.05

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 rpm : 950

Del.quantity cm3/: 165.0...173.0

1000 s: (163.0...175.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 121.0...123.0

1000 s: (118.0...126.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 255.0...295.0

1000 s: (251.0...299.0) Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 nm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

**APPLICATION** 

Omnibus

## Note remarks

Test sheet : MB : 3.12.93 Edition Replaces : 06.92 : ISO-4113 Test oil

Combination no. : 0 402 646 915x

Injection pump

Pump designat on : PE6P120A320LS7836-10

: 0 412 626 854 EP type number

Governor

Governor design. : RQ300/1050PA972 Governer no. : 0 421 801 542

Cust. part no. : 0200740202

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 200.0 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 D25

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00X1.50X1000 x / ength mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm : 10501st speed

Rack travel in mm : 13.15...13.25

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 5.3...5.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050Aneroid pressure h: 1400

: 201.5...203.5 Del.quantity

1000 : (198.5...206.5)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rom : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 12.10

Speed rpm : 1090...1105

2nd rack travel in: 4.00

Speed rpm : 1165...1195

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.6

Testina:

Speed : 200 rpm Minimum rack trave: 7.50

Speed : 300 COM

Rack travel in mm : 5.50...5.70

Rack travel in mm: 2.00

: 380...420 Speed CDM

Aneroid/Altitude Compensator Test

1st version

Settina

: 400 Speed rom Pressure hPa : 1400

Rack travel mm : 13.15...13.25

Measurement

Speed 1/min: 400

1st pressure hPa : 250

Rack travel in m: 11.10...11.30 \*

2nd pressure hPa : 400

Rack travel in m: 12.00...12.20 \*

5th pressure hPa : -

Rack travel in m: 10.00...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400

Speed rpm : 800 Del.quantity cm3/ : 202.0...206.0

1000 s: (199.0...209.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 3500

Speed : 400 mom

Del.quantity cm3/: 148.5...151.5

1000 s: (145.5...154.5)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/: 129.0...131.0 1000 s: (126.0...134.0)

Spread cm3 : 8.00

1000 s: (12.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 1090...1106 Speed

STARTING FUEL DELIVERY

Speed rom : 100

Del.quantity cm3/: 50.0...70.0 1000 s: (46.0...74.0)

Rack travel in mm : 10.10...10.40

\* Value only applies to initial setting of LDA spring.

Ultimate setting of the LDA spring is

performed by way of the appropriate setting given in the delivery curve.

Note remarks

Test sheet : MB

Edition : 6.12.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 916

Injection pump

Pump designation : PE6P120A320LS7836-10

EP type number : 0 412 626 854

Governor

: RQV300...1050PA797 Governor design.

-17

: 0 421 813 884 Governer no.

Cust. part no. : 0200740302

Customer-spec, information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

1st version kW : 200.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Mall thickness

x Length mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.15...13.25

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.3...5.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.11...1.41 travel mm rpm : 637

2nd speed

: 4.93...5.43 travel mm

rpm : 830 3rd speed

travel mm : 6.02...6.52

4th speed rpm : 1107

travel mm : 8.28...8.68

rpm : 1218 5th speed

: 9.75...10.25 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 1400

: 201.5...203.5 Del.quantity 1000 : (198.5...206.5)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version Control Lever

position degrees: 118...126

Testina:

1st rack travel in: 12.20

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 80...88

Testina:

Speed : 200 rom Minimum rack trave: 7.60 : 300 Speed rpm

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

rpm : 300. 500 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rom : 400 hPa : 1400 Pressure

: 13.15...13.25 Rack travel mm

Measurement

1/min: 400 Speed

1st pressure hPa : 250

Rack travel in m: 11.10...11.30 \*

2nd pressure hPa : 400

Rack travel in m: 12.00...12.20 \*

5th pressure hPa : -

Rack travel in m: 10.10...10.40

START CUT-OUT

Speed

 $1/\min : 240 (260)$ 

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400 Speed rpm : 800

Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0)

Spread

cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: 350

Speed : 400 man

Del.quantity cm3/: 148.5...151.5

1000 s: (145.5...154.5)

Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 129.0...131.0

1000 s: (126.0...134.0)

cm3 : 8.00 Spread

1000 s: (12.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.20

nom : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 200.0...220.0

1000 s: (196.0...224.0)

Remarks:

\* Value only applies to initial setting of LDA spring.

Ultimate setting of the LDA spring is performed by way of the appropriate

setting given in the delivery curve.